



MEXICO STATEWIDE WILDERNESS STUDY

VOLUME 1: FINAL ENVIRONMENTAL IMPACT STATEMENT



U.S. Department of the Interior, Bureau of Land Management
New Mexico State Office, Santa Fe, NM
January 1988



IN REPLY REFER TO:

United States Department of the Interior

8500
1792 (934)

BUREAU OF LAND MANAGEMENT

NEW MEXICO STATE OFFICE

Post Office and Federal Building

P.O. Box 1449

Santa Fe, New Mexico 87504-1449

OH
76.5
.N6
N485
1988
V.1

Dear Reader:

This is your copy of the Final Environmental Impact Statement (EIS) for the New Mexico Statewide Wilderness Study. The purpose of this study is to determine the suitability or non-suitability of 47 Wilderness Study Areas (WSA's) for recommended inclusion in the National Wilderness Preservation System. These WSA's are scattered throughout New Mexico and encompass 949,919 acres of public land.

This document presents my recommendations for these 47 WSA's. The Final EIS contains four volumes; Volume 1 is the Statewide overview which analyzes the Statewide environmental consequences for each alternative; Volumes 2, 3 and 4 provide a detailed analysis of each of the 47 WSA's.

The final decision will be made by Congress and the formal procedure is as follows: The Final EIS will be submitted to the Secretary of Interior along with minerals information prepared by the Bureau of Mines and the United States Geological Survey. The Secretary will review this information and then submit his recommendations to the President of the United States by 1991. The President in turn will forward his recommendations to Congress where the final decisions about wilderness will be made. This procedure, however, does not preclude Congress from acting earlier and the New Mexico Congressional Delegation has already initiated work on the New Mexico wilderness issue.

Since 1978, the Bureau of Land Management (BLM) has been studying the wilderness potential of the public lands. During this time, we have held many public meetings and we have requested your input on numerous documents. On behalf of the BLM, I want to thank you for the time and effort you made to participate in this study. BLM staff and managers have carefully read and listened to all the comments throughout this process. Your input to this study has helped us formulate, revise and refine our proposals. Once again, thanks for your participation.

Sincerely,

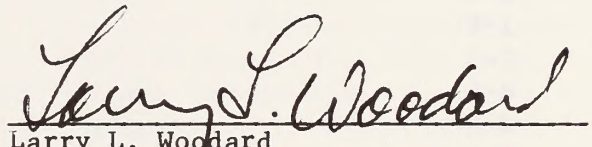
Larry L. Woodard
State Director

FINAL
ENVIRONMENTAL IMPACT STATEMENT
for the
NEW MEXICO STATEWIDE WILDERNESS STUDY

TYPE OF ACTION: () Administrative (X) Legislative

ABSTRACT: The Bureau of Land Management (BLM) proposes to recommend all or part of 27 Wilderness Study Areas (WSAs) involving approximately 545,072 acres of public land in New Mexico as suitable for wilderness designation. Approximately 408,178 acres in 20 WSAs are proposed to be recommended as unsuitable for wilderness designation. This document analyzes the environmental consequences of the proposal and four other alternatives; no wilderness, conflict resolution, emphasis on manageability, and all wilderness. Implementation of the proposed action would provide long-term maintenance of wilderness values in the areas recommended as suitable. In those areas recommended as unsuitable for wilderness designation, mineral exploration and development would be allowed.

FOR FURTHER INFORMATION CONTACT: Joe Sovcik, Environmental Impact Statement (EIS) Team Leader, Bureau of Land Management, New Mexico State Office, P.O. Box 1449, Santa Fe, New Mexico 87501-1449. Telephone: Commercial (505) 988-6565 or FTS 476-6565.


Larry L. Woodard
State Director, New Mexico

BLM Library
D-553A, Building 50
Denver Federal Center
P. O. Box 25047
Denver, CO 80225-0047

TABLE OF CONTENTS
VOL. 1 - FINAL EIS

	<u>Page</u>
SUMMARY	S-1
<u>CHAPTER 1 - PURPOSE AND NEED</u>	1-1
Introduction	1-1
Purpose and Need for the Proposed Action	1-1
The BLM Wilderness Review	1-4
Inventory	1-4
Study	1-4
Reporting	1-6
The BLM New Mexico Wilderness Study Planning Process	1-6
Planning Issue and Criteria	1-6
Formulation of Statewide Alternatives	1-7
Interrelationships with Other Projects	1-7
State and Local Land Use Plans	1-7
Other BLM WSAs in New Mexico	1-7
Administrative Appeals	1-8
<u>CHAPTER 2 - ALTERNATIVES INCLUDING THE PROPOSED ACTION</u>	2-1
Introduction	2-1
Alternatives Evaluated On A Statewide EIS	2-1
Proposed Action	2-1
All Wilderness	2-5
Emphasis on Manageability	2-6
Conflict Resolution	2-8
No Wilderness	2-10
Comparison of Statewide Impacts	2-11
<u>CHAPTER 3 - AFFECTED ENVIRONMENT</u>	3-1
Introduction	3-1
Wilderness Values	3-1
Size	3-1
Naturalness	3-2
Opportunities For Solitude and Primitive Types of Recreation	3-2
Special Features	3-2
Diversity in the National Wilderness Preservation System	3-3
Existing Energy and Mineral Resources	3-13
Introduction	3-13
Regional Geologic Setting	3-13
Energy and Mineral Resource Production in New Mexico	3-15
Potential Mineral Resources in New Mexico	3-16
Mineral Resources Potential of the WSAs	3-16
Livestock Grazing Use Levels	3-26

TABLE OF CONTENTS
VOL. 1 - FINAL EIS
(Continued)

	<u>Page</u>
<u>CHAPTER 4 - ENVIRONMENTAL CONSEQUENCES</u>	4-1
Introduction	4-1
Assumptions and Analysis Guidelines for Statewide Impact Analysis	4-1
Analysis of Statewide Environmental Consequences	4-2
Proposed Action	4-3
Impacts On Wilderness Values	4-3
Impacts On Exploration And Development Of Mineral Resources	4-7
Impacts On Livestock Grazing Use Levels	4-16
All Wilderness Alternative	4-19
Impacts On Wilderness Values	4-19
Impacts on Exploration And Development Of Mineral Resources	4-21
Impacts On Livestock Grazing Use Levels	4-22
Emphasis On Manageability Alternative	4-24
Impacts On Wilderness Values	4-24
Impacts On Exploration And Development Of Mineral Resources	4-26
Impacts On Livestock Grazing Use Levels	4-27
Conflict Resolution Alternative	4-29
Impacts On Wilderness Values	4-29
Impacts On Exploration And Development Of Mineral Resources	4-32
Impacts On Livestock Grazing Use Levels	4-33
No Wilderness Alternative	4-34
Impacts On Wilderness Values	4-34
Impacts On Exploration And Development Of Mineral Resources	4-36
Impacts On Livestock Grazing Use Levels	4-36
<u>CHAPTER 5 - CONSULTATION AND COORDINATION</u>	5-1
Introduction	5-1
Scoping Actions	5-1
Scoping Results	5-3
Review of the Revised Draft EIS	5-8
Team Organization	5-10
Comments on the Revised Draft EIS	5-10
Comment Letters from Federal, State, and Local Governments and Indian Tribes and Responses to Substantive Comments	5-21
Responses to Substantive Comments from Individuals and Organizations	5-68
APPENDIX A	A-1
GLOSSARY	G-1
REFERENCES	R-1
INDEX	I-1

TABLE OF CONTENTS
VOL. 2 - WILDERNESS ANALYSIS REPORTS

1. Rio Chama	9. Manzano
2. Sabinoso	10. Ojito
3. San Antonio	11. Petaca Pinta
4. Cabezón	12. Rimrock
5. Empedrado	13. Sand Canyon
6. Ignacio Chavez	14. Little Rimrock
7. Chamisa	15. Pinyon
8. La Lena	A. Ah-shi-sle-pan

TABLE OF CONTENTS
VOL. 3 - WILDERNESS ANALYSIS REPORTS

16. Antelope	24. Sierra de las Canas
17. Continental Divide	25. Sierra Ladrónes
18. Devil's Backbone	26. Stallion
19. Eagle Peak	27. Veranito
20. Horse Mountain	28. Adén Lava Flow
21. Jornada del Muerto	29. Alamo Hueco Mountains
22. Mesita Blanca	30. Big Hatchet Mountains
23. Presilla	31. Blue Creek

TABLE OF CONTENTS
VOL. 4 - WILDERNESS ANALYSIS REPORTS

32. Cedar Mountains	39. Robledo Mountains
33. Cooke's Range	40/41. West Potrillo Mountains and Mount Riley
34. Cowboy Spring	42. Brokeoff Mountains
35. Florida Mountains	43. Culp Canyon
36. Gila Lower Box	44/45. Carrizozo Lava Flow and Little Black Peak
37. Las Uvas Mountains	46. Mudgetts
38. Organ Mountains	

LIST OF TABLES
VOL. 1 - FINAL EIS

<u>Table No.</u>		<u>Page</u>
S-1	Summary Description of the Proposed Action and Alternatives	S-2
1-1	WSAs in the New Mexico Statewide Study	1-3
1-2	Wilderness Review Process	1-5
2-1	Description of the Proposed Action and Alternatives	2-2
2-2	WSAs by Acreage and Alternative	2-3
2-3	Comparison of Statewide Impacts	2-12
3-1	Ecosystems and Landforms Represented in the WSAs	3-4
3-2	Existing and Potential Ecosystem Representation	3-7
3-3	Driving Time to WSAs for Solitude or Primitive Recreation Opportunities	3-11
3-4	Designated Wilderness Areas in New Mexico	3-12
3-5	Energy Mineral Potential by WSA	3-23
3-6	Metal Potential by WSA	3-24
3-7	Industrial Minerals Potential by WSA	3-25
3-8	Grazing Acreages and AUMs in New Mexico	3-26
3-9	Existing and Proposed Range Developments for WSAs Recommended Suitable	3-27
4-1	Ecosystem Acres Recommended Suitable for Wilderness Designation by Alternative	4-6
4-2	Comparison of Additional Wilderness Opportunities within Five Hours Drive of the Standard Metropolitan Statistical Areas (SMSAs)	4-7
4-3	Number of Mining Claims Impacted by Each Alternative	4-9
4-4	Acres of High and Moderate Mineral Potential Affected by Wilderness Designation by Alternative	4-10
4-5	Impacts on Coal Resources	4-12
4-6	Impacts on Geothermal Resources	4-12
4-7	Impacts on Oil and Gas Resources	4-13
4-8	Impacts on Uranium Resources	4-13
4-9	Impacts on Metallic Mineral Resources	4-14
4-10	Number of AUMs Within the WSAs Recommended Suitable	4-17
4-11	Percentage of New Mexico Grazing Land Within the WSAs Recommended Suitable	4-17
5-1	Scoping Summary	5-4
5-2	Document Recipients	5-9
5-3	List of Preparers	5-11
5-4	List of Those Who Submitted Comments on The Revised Draft EIS	5-16

LIST OF TABLES
(Continued)

<u>Table No.</u>		<u>Page</u>
A-1	Demand and Production Relationships - Energy Minerals (1983) - Quadrillion BTU	A-5
A-2	Demand and Production Relationships - Metals	A-6
A-3	Demand and Production Relationships - Industrial Minerals	A-7
A-4	Impact of the Proposed Action by WSA	A-8
A-5	Impact of the All Wilderness Alternative by WSA	A-11
A-6	Impact of the Manageability Alternative by WSA	A-16
A-7	Impact of the Conflict Resolution Alternative by WSA	A-20

LIST OF MAPS

<u>Map No.</u>		<u>Page</u>
A	State of New Mexico Wilderness Status Map	Pocket, Inside Back Cover
1-1	BLM WSAs in the New Mexico Statewide Wilderness Study	Back of Summary Divider Page and 1-2
3-1	Ecoregions in New Mexico	3-9
3-2	Physiographic Map of New Mexico	3-14
3-3	Coal Resources in New Mexico	3-17
3-4	Geothermal Resources in New Mexico	3-18
3-5	Generalized Oil and Gas Resource Potential of New Mexico	3-19
3-6	Uranium and Thorium Resources in New Mexico	3-20
3-7	Metallic Mineral Resource Areas in New Mexico	3-21

Table 1

Table 1

Page

1-1	Impact of the Soviet Invasion of Poland
1-2	Impact of the Soviet Invasion of Poland
1-3	Impact of the Soviet Invasion of Poland
1-4	Impact of the Soviet Invasion of Poland
1-5	Impact of the Soviet Invasion of Poland
1-6	Impact of the Soviet Invasion of Poland
1-7	Impact of the Soviet Invasion of Poland
1-8	Impact of the Soviet Invasion of Poland
1-9	Impact of the Soviet Invasion of Poland
1-10	Impact of the Soviet Invasion of Poland

Table 2

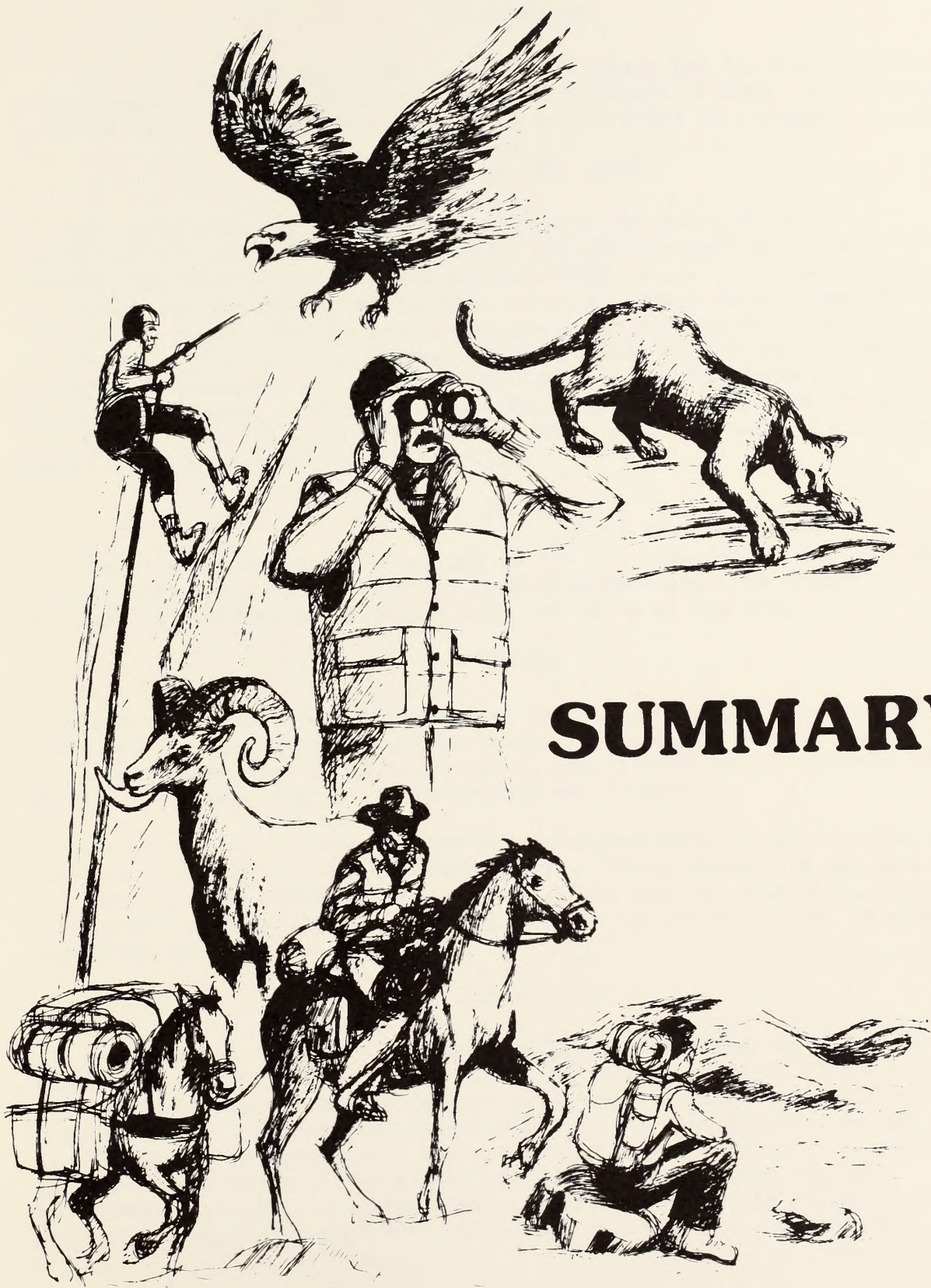
Table 2

Page

1-1	Impact of the Soviet Invasion of Poland
1-2	Impact of the Soviet Invasion of Poland
1-3	Impact of the Soviet Invasion of Poland
1-4	Impact of the Soviet Invasion of Poland
1-5	Impact of the Soviet Invasion of Poland
1-6	Impact of the Soviet Invasion of Poland
1-7	Impact of the Soviet Invasion of Poland
1-8	Impact of the Soviet Invasion of Poland
1-9	Impact of the Soviet Invasion of Poland
1-10	Impact of the Soviet Invasion of Poland

Impact of the Soviet Invasion of Poland

Impact of the Soviet Invasion of Poland



SUMMARY

SUMMARY

INTRODUCTION

This is a summary of Volume 1, which addresses the Statewide analysis of the proposed action, alternatives, and environmental issues. Site-specific analyses by Wilderness Study Area (WSA) are provided in Volumes 2 through 4.

PURPOSE OF THE STUDY

The purpose of this study is to determine the suitability or nonsuitability of 47 WSAs in New Mexico for recommended inclusion in the National Wilderness Preservation System (NWPS) to meet the requirements of the Wilderness Act to provide wilderness areas for future generations and to allocate to other multiple uses those lands not recommended suitable for wilderness. This study is in response to Section 603 of the Federal Land Policy and Management Act (FLPMA) which directs the Bureau of Land Management (BLM) to inventory, study, and report to Congress, through the Secretary of the Interior and the President, those public lands recommended suitable and nonsuitable for wilderness preservation.

SETTING

The 47 WSAs analyzed are located in the BLM Albuquerque, Las Cruces, and Roswell Districts. These WSAs are scattered throughout the State and encompass 949,919 acres of public land, as shown on Map 1-1.

ISSUES

Statewide issues and site-specific issues have been identified and are evaluated in this Revised Draft Environmental Impact Statement (EIS). The Statewide issues are: wilderness values, exploration and development of mineral resources, and livestock grazing use levels.

This Statewide overview of the 47 individual WSAs provides a cumulative analysis of the principle Statewide issues. These issues are not necessarily the same as those addressed for each WSA; however, the cumulative or Statewide issues were considered important enough to scope out separately to provide a Statewide analysis.

ALTERNATIVES

Each WSA was evaluated for an All Wilderness Alternative and a No Wilderness Alternative. In some cases, an Amended Boundary Alternative was evaluated when opportunities existed to minimize resource conflicts or improve manageability. From the individual WSAs, a Statewide Proposed Action and four alternatives were developed. The Statewide alternatives include: All Wilderness, Emphasis on Manageability, Conflict Resolution, and No Wilderness. The following table provides a brief description of the number of WSAs and acreages involved with the proposed action and alternatives.

TABLE S-1
SUMMARY DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

	All Wilderness	Emphasis on Manageability	Proposed Action	Conflict Resolution	No Wilderness
Number of Areas Managed as Wilderness	47	36	27	13	0
Number of Acres Managed as Wilderness	949,919	686,113	545,072	315,931	0
Number of Acres Managed Without Wilderness Protection	0	267,160	408,178	633,988	949,919
Percent of Total WSA Acreage Recommended Suitable for Wilderness	100	72	57	33	0

STUDY RECOMMENDATIONS

The Proposed Action recommends all or parts of 27 WSAs and some non-WSA public land, totalling 545,072 acres, as suitable for wilderness designation (see Map 1-1). This action also recommends 20 WSAs (408,178 acres) as unsuitable for wilderness designation.

MAJOR ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION AND ALTERNATIVES

WILDERNESS VALUES

Proposed Action

The landscapes which would be preserved under the Proposed Action include lava flows, forested mountains, river canyons, and the more typical desert mountains and lowlands of the Southwest. The suitable acreage represents approximately 4½ percent of the BLM-administered lands in New Mexico and less than 1 percent of the total land area in New Mexico.

The outstanding opportunities for solitude and primitive recreation in the areas recommended suitable for wilderness designation would be maintained. Examples of these opportunities include rock climbing on Cabezon Peak and the Organ Mountains, floatboating the Chama and Gila Rivers, backpacking in the high mountains of the Sierra Ladrones, Ignacio Chavez, and Continental Divide WSAs or in the relatively undisturbed and expansive stretch of Chihuahuan Desert in the West Potrillo Mountains/Mount Riley WSAs, and hiking and photography in the Rimrock, Little Rimrock, Sand Canyon, and Pinyon WSAs or on the stark and pristine Carrizozo, Little Black Peak, Jornada, and Aden lava flows.

The special features of the WSAs which would be maintained or enhanced include: Bat Cave, an archaeological resource site; raptor nesting sites; the

largest natural arch in the State; bighorn sheep, including an area for potential reintroduction of bighorn sheep; studies of melanistic species in the lava flows; undisturbed mountain lion habitat; and the scenic qualities of these remaining roadless and natural areas of New Mexico. There would be 17 new ecosystems added to the NWPS, and approximately 60 percent of the existing solitude and primitive recreation opportunities within a day's driving time (5 hours) of the Standard Metropolitan Statistical Areas (SMSAs) would be maintained. If the Proposed Action were implemented, the ecosystems within the Chihuahuan Desert Province, Colorado Plateau Province, and Mexican Highlands Shrub Steppe Province would be the first of their type to be included in the NWPS.

Naturalness, solitude, and primitive recreation opportunities would be diminished on the 408,178 acres recommended unsuitable for wilderness designation under the Proposed Action. This would be due to energy and mineral exploration and development, including road building; construction of rangeland facilities, including fences, pipelines, water holding facilities, and access roads; and recreational off-road vehicle (ORV) use.

The 12,391-acre Oak Juniper Woodland Scrub Ecosystem in the Mexican Highlands Shrub Steppe Province would not be added to the NWPS. This ecosystem is within the Alamo Hueco Mountains WSA and is unique in that it is not nationally represented in any other area currently designated as wilderness or under wilderness review by BLM or any other agency.

Alternatives

There would be approximately 40 percent more land maintained in a natural condition under the All Wilderness Alternative than under the Proposed Action. The WSA acreage represents approximately 8 percent of the BLM-administered land in New Mexico and 1 percent of the total land area in New Mexico.

The primary difference between the Emphasis on Manageability Alternative and the All Wilderness Alternative is the consideration given to long-term wilderness management. Only those areas which could reasonably be maintained as wilderness over the long-term are recommended as suitable for wilderness designation under the Emphasis On Manageability Alternative. This would represent a 141,041-acre increase in suitable lands over the Proposed Action.

The Conflict Resolution Alternative represents a 42 percent reduction from the Proposed Action in the number of areas and acres recommended suitable for wilderness designation. The lands which would be recommended for designation as wilderness under this alternative represent 3 percent of the area administered by the BLM in New Mexico and less than $\frac{1}{2}$ of 1 percent of the total land area in the State.

Under the No Wilderness Alternative, the natural landscape in all of the WSAs, totalling 949,919 acres, would be diminished over the long-term due to resource use and development.

EXPLORATION AND DEVELOPMENT OF MINERAL RESOURCES

Proposed Action

Under the Proposed Action, less than 2 percent of the lands in New Mexico classified as having a moderate or high potential for energy resources would be precluded from exploration and possible development. With the exception of barite, nickel, and cobalt, less than 2 percent of lands in New Mexico with significant potential for hosting metallic and nonmetallic mineral resources would be withdrawn. Because the percentages are low, no significant Statewide impacts are anticipated; however, more than 5 percent of the lands in New Mexico with potential for cobalt and nickel resources would be affected. Due to the very limited distribution of nickel and cobalt (critical and strategic minerals) in New Mexico, these commodities were not amenable to being addressed in relation to the percentage of lands classified as having moderate or high potential.

Of the 24,000 acres of lands classified as having a moderate potential for tin within the Continental Divide WSA, only 14,700 acres would be precluded from further exploration and possible development. The withdrawn area only affects about 1 percent of New Mexico's total area of significant tin resource potential.

Approximately 8,100 acres of lands classified as having moderate potential for cobalt and nickel occur entirely within the Sierra Ladrones WSA. Since the only other known occurrences in New Mexico for these commodities exist in the Luis Lopes and Blackhawk Mining Districts, wilderness designation of the Sierra Ladrones WSA could have a significant impact on production of cobalt if an economic deposit does exist in the WSA.

Alternatives

Impacts to mineral exploration and possible development from the All Wilderness Alternative would be similar to the Proposed Action, except that approximately 5 and 7 percent of New Mexico's fluorite and barite resources, respectively, would be precluded from exploration and possible development. In addition, approximately 11 percent of New Mexico's manganese resource would be withdrawn from exploration and development. Impacts to minerals under the Emphasis On Manageability Alternative are intermediate to the Proposed Action and All Wilderness Alternative. Impacts under the Conflict Resolution Alternative are insignificant, and no adverse impacts were identified under the No Wilderness Alternative.

LIVESTOCK GRAZING USE LEVELS

Proposed Action

Under the Proposed Action, less than 1 percent of the 64 million acres of land in New Mexico used for livestock grazing would be impacted. Because this percentage is considered low, no significant Statewide impacts are anticipated. The biggest impact would be inconvenience to the livestock operator because vehicle use on 215 miles of ways would be eliminated or sharply curtailed. Of this amount, it is estimated that one-third

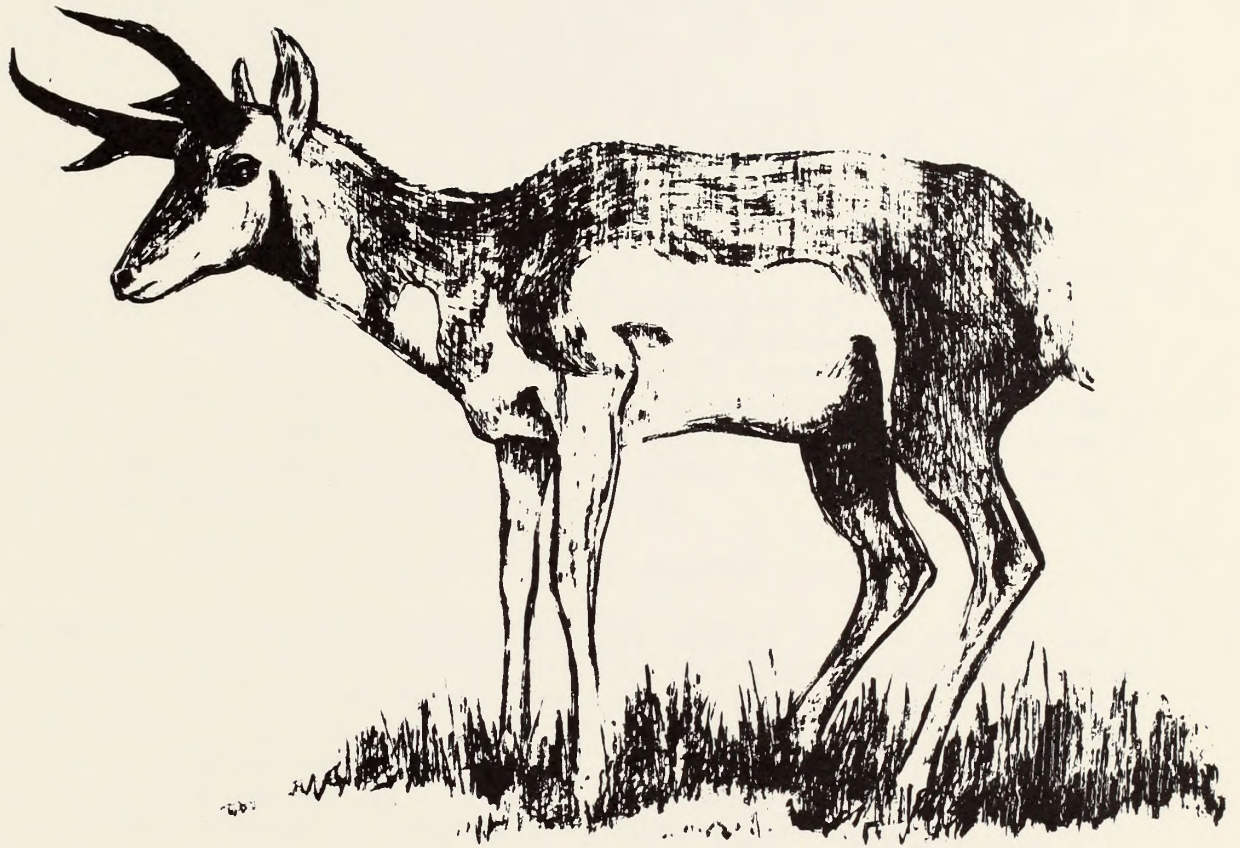
(approximately 70 miles) of these ways are specifically used by livestock operators to drive vehicles to rangeland developments, to distribute salt or feed supplement, or to check livestock distribution and condition.

Proposals for rangeland developments generally occur in allotments which overlap WSA boundaries. These proposals would probably be considered for implementation in those portions of allotments immediately outside the WSA boundaries. Since these developments were designed to redistribute livestock rather than increase animal unit months (AUMs), no impacts on livestock numbers would occur.

Over the long-term, pressures for use of public land would increase, including those WSAs not designated as wilderness. On those 408,178 acres which are not recommended suitable for wilderness, other types of impacts are expected to occur. For most of this acreage, ORV use and mineral exploration (including roadbuilding) are anticipated. These activities would be expected to result in increased vandalism to rangeland developments, harassment to and theft of livestock, gates left open allowing livestock to wander, littering, and indiscriminate dumping. Surface disturbance would also tend to increase erosion rates, resulting in increased sedimentation and a need for more frequent maintenance of stock tanks. Where surface disturbance is extensive (such as that from mineral development), the loss of forage could affect AUMs.

Alternatives

Under the other alternatives, the impacts would be similar to the Proposed Action, and vary only in proportion to the acreages of lands recommended as suitable or unsuitable for wilderness designation.



CHAPTER 1

Purpose & Need



CHAPTER I

PREFACE

CHAPTER 1

PURPOSE AND NEED

INTRODUCTION

The New Mexico Bureau of Land Management (BLM) Revised Draft Statewide Wilderness Environmental Impact Statement (EIS) addresses 47 Wilderness Study Areas (WSAs), totalling 949,919 acres. These WSAs are located throughout the State of New Mexico as shown on Map 1-1. Table 1-1 lists the WSAs and their acreages by BLM District.

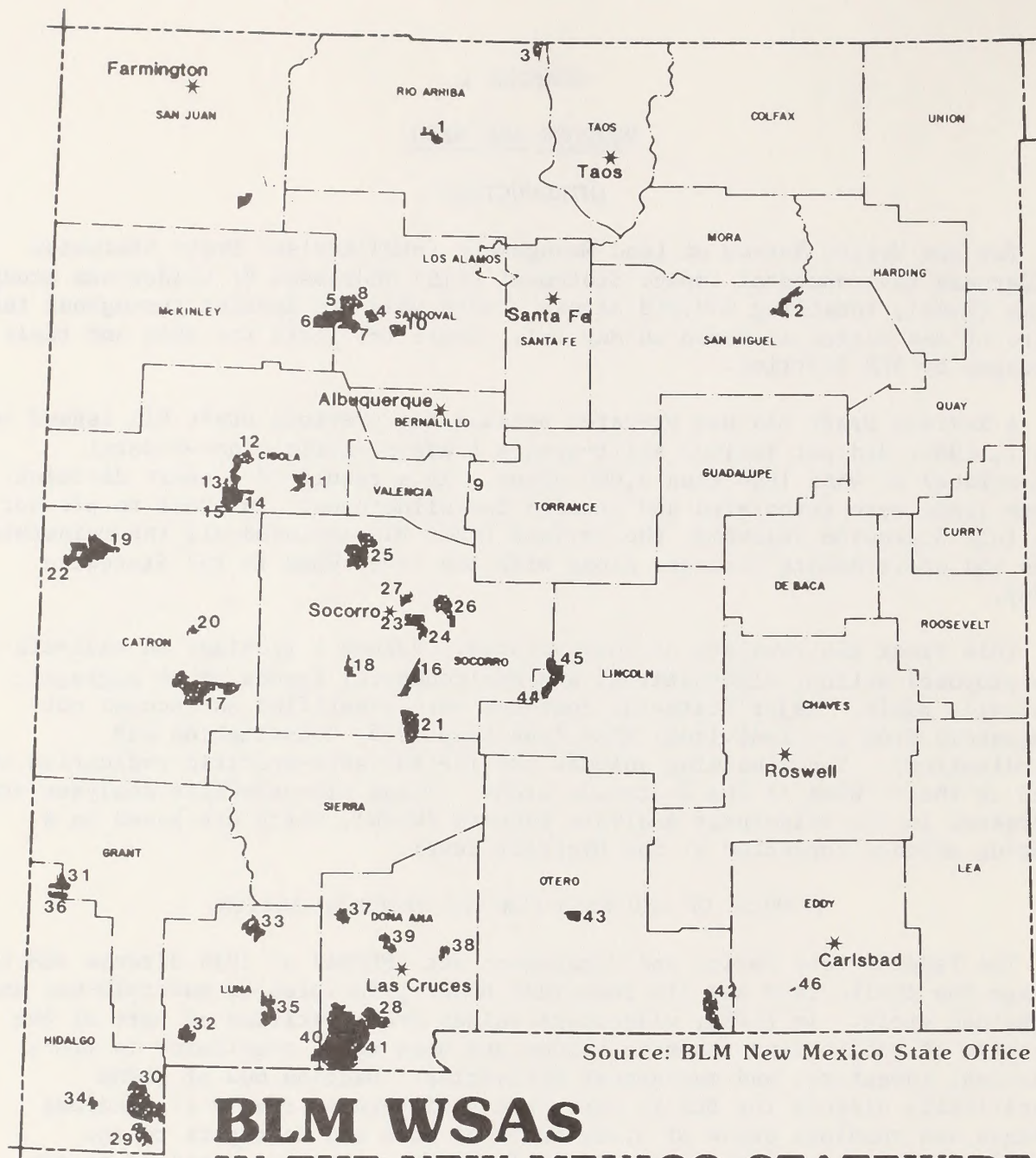
A Revised Draft EIS was prepared because the previous Draft EIS issued on May 1, 1985, did not include split-estate (Federal surface/non-Federal subsurface) or WSAs less than 5,000 acres. As a result of a court decision, these lands were reinstated and studied for wilderness. In order to present the full Statewide analysis, the Revised Draft EIS included all the reinstated WSAs and split-estate acreage, along with the other WSAs in the Statewide Study.

This Final EIS consists of four volumes. Volume 1 provides an analysis of the proposed action, alternatives, and environmental issues on an aggregate Statewide basis. Major Statewide concerns were identified and scoped out separately from the individual WSAs (see Chapter 5, Consultation and Coordination). The remaining volumes provide the site-specific evaluation of each of the 47 WSAs in the Statewide study. These site-specific analyses are addressed in the Wilderness Analysis Reports (WARs), which are based on a scoping process conducted at the District level.

PURPOSE OF AND NEED FOR THE PROPOSED ACTION

The Federal Land Policy and Management Act (FLPMA) of 1976 directs BLM to manage the public land and its resources under principles of multiple-use and sustained yield. In FLPMA, wilderness values are identified as part of the spectrum of public land resource values and uses to be considered in BLM's planning, inventory, and management activities. Section 603 of FLPMA specifically directs the BLM to carry out a wilderness review of roadless islands and roadless areas of 5,000 acres or more and to report to the President through the Secretary of the Interior, recommendations as to the suitability or nonsuitability of each such area or island for preservation as wilderness. The President will then make recommendations to Congress. Areas can be designated as wilderness or released from further wilderness review only by an Act of Congress. The purpose of this EIS is to comply with Section 603 of FLPMA.

The need for wilderness suitability and nonsuitability recommendations is linked to the nature of wilderness resources. They are limited, nonrenewable resources located today almost exclusively on Federally-owned lands. Therefore, through FLPMA Congress directed BLM to manage all areas under wilderness review in a manner so as not to impair their suitability for preservation as wilderness until the review is completed. BLM's special



Source: BLM New Mexico State Office

BLM WSAS IN THE NEW MEXICO STATEWIDE WILDERNESS STUDY

ALBUQUERQUE DISTRICT

1. Rio Chama
2. Sabinoso
3. San Antonio
4. Cabezón
5. Empedrado
6. Ignacio Chavez
7. Chamisa
8. La Lena
9. Manzano
10. Ojito
11. Petaca Pinta
12. Rimrock
13. Sand Canyon
14. Little Rimrock
15. Pinyon
- A. Ah-shi-sle-pah

LAS CRUCES DISTRICT

16. Antelope
17. Continental Divide
18. Devil's Backbone
19. Eagle Peak
20. Horse Mountain
21. Jornada Del Muerto
22. Mesita Blanca
23. Presilla
24. Sierra de las Canas
25. Sierra Ladrones
26. Stallion
27. Veranito
28. Aden Lava Flow
29. Alamo Hueco Mtns.
30. Big Hatchet Mtns.
31. Blue Creek

32. Cedar Mtns.
33. Cooke's Range
34. Cowboy Spring
35. Florida Mtns.
36. Gila Lower Box
37. Las Uvas Mtns.
38. Organ Mtns.
39. Robledo Mtns.
40. West Potrillo Mtns.
41. and Mt. Riley
42. Brokeoff Mtns.
43. Culp Canyon

ROSWELL DISTRICT

44. Carrizozo Lava Flow
45. Little Black Peak
46. Mudgetts

TABLE 1-1
WSAs IN THE NEW MEXICO STATEWIDE STUDY

DISTRICT	WSA ACREAGE
ALBUQUERQUE DISTRICT	
1. Rio Chama	11,985
2. Sabinoso	15,760
3. San Antonio	7,050
4. Cabezón	8,159
5. Empedrado	9,007
6. Ignacio Chavez <u>a/</u>	33,264
7. Chamisa <u>a/</u>	13,692
8. La Lena	10,438
9. Manzano	881
10. Ojito	10,903
11. Petaca Pinta	11,668
12. Rimrock	29,818
13. Sand Canyon <u>a/</u>	8,543
14. Little Rimrock <u>a/</u>	9,920
15. Pinyon <u>a/</u>	12,365
A. Ah-shi-sle-pah	6,563
LAS CRUCES DISTRICT	
16. Antelope	20,710
17. Continental Divide	68,761
18. Devil's Backbone	8,904
19. Eagle Peak	43,960
20. Horse Mountain	5,032
21. Jornada del Muerto	31,147
22. Mesita Blanca	19,414
23. Presilla	8,680
24. Sierra de las Canas	12,838
25. Sierra Ladrones	45,308
26. Stallion	24,238
27. Veranito	7,206
28. Aden Lava Flow	25,287
29. Alamo Hueco Mtns.	16,264
30. Big Hatchet Mtns.	65,872
31. Blue Creek	14,896
32. Cedar Mtns.	14,911
33. Cooke's Range	19,608
34. Cowboy Spring	6,699
35. Florida Mtns.	22,336
36. Gila Lower Box	8,555
37. Las Uvas Mtns.	11,067
38. Organ Mtns.	7,283
39. Robledo Mtns.	12,946
40. West Potrillo Mtns. <u>a/</u>	
41. Mt. Riley <u>a/</u>	157,185
42. Brokeoff Mtns.	31,606
43. Culp Canyon	10,937
ROSWELL DISTRICT	
44. Carrizozo Lava Flow <u>a/</u>	
45. Little Black Peak <u>a/</u>	25,312
46. Mudgetts	2,941
ACREAGE TOTALS	949,919

NOTE: a/ WSAs 6 and 7; WSAs 13, 14, and 15; WSAs 40 and 41; and WSAs 44 and 45 are adjacent to each other and are being studied jointly.

management provisions (the Interim Management Policy and Guidelines for Lands Under Wilderness Review, December 1979, as revised) apply to all WSAs since they all possess the minimum characteristics needed to qualify as potential wilderness areas. BLM's wilderness studies and the wilderness EIS are needed to communicate to the President, and ultimately to Congress, BLM's recommendations for the allocation of the wilderness resources on public lands in New Mexico.

THE BLM WILDERNESS REVIEW

The BLM wilderness review consists of three phases: 1) inventory, 2) study, and 3) reporting. This EIS is part of the study phase. Table 1-2 describes some of the components of these three phases.

INVENTORY

The 47 WSAs addressed in this study were identified using the wilderness inventory procedures described in the BLM's Wilderness Inventory Handbook of September 27, 1978. The results of the intensive wilderness inventory were announced on November 15, 1980. Copies of the Wilderness Study Area Decisions, New Mexico BLM Intensive Wilderness Inventory are available at all BLM offices in New Mexico.

In order to qualify for WSA status, an area was required to contain the following wilderness characteristics described in the Wilderness Act of 1964: 1) at least 5,000 acres or more of contiguous public land or be of a size to make practical its preservation and use in an unimpaired condition; 2) generally appear to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; and 3) outstanding opportunities for solitude or a primitive and unconfined type of recreation. In addition, areas qualifying for WSA status may contain supplemental values which include ecological, geological, or other features of scientific, educational, scenic, or historic value. The BLM wilderness inventory determined that the WSAs in Table 1-1 contain these minimum wilderness characteristics.

STUDY

The primary goal of the BLM wilderness study process is to recommend for wilderness designation those areas where wilderness is determined to be the most appropriate use of the land and its resources.

It is the policy of the BLM that each WSA be studied through the BLM planning system to analyze all values, resources, potential conflicts, and land uses. The findings of the study, including those derived from public participation, determine whether an area will be recommended suitable or unsuitable for designation as wilderness. In practice, determining an area's "suitability or unsuitability . . . for preservation as wilderness," in the words of FLPMA, means determining whether the area is more suitable for wilderness designation or more suitable for other uses.

TABLE 1-2

WILDERNESS REVIEW PROCESS

PHASE	STEP	PURPOSE OF STEP	PURPOSE OF PUBLIC PARTICIPATION	COMPLETION DATE
Inventory	Inventory (completed by each District)	To identify lands with wilderness characteristics: -Roadless -5000 acres -Natural -Outstanding opportunity for solitude or primitive and unconfined recreation	To provide additional inventory information and comment on whether specific areas have wilderness characteristics	Completed August 1980
	District Environmental Assessments (completed by each District)	To determine the impacts of designation or non-designation on a site specific basis.	To comment on site specific impacts identified in the draft environmental assessments, including boundary adjustments.	Completed August 1984
	Statewide EIS scoping (completed by New Mexico State Office)	To identify the issues and criteria for evaluating alternatives that will be included in the statewide Wilderness EIS.	To comment on the alternatives, criteria and scope of the EIS.	Completed September 1984
Study	Draft EIS (completed by New Mexico State Office)	To evaluate impacts of alternatives and select a preferred alternative.	To comment on the cumulative statewide impacts and alternatives identified in the EIS.	Comments due August 1985
	Revised Draft EIS (completed by New Mexico State Office)	To evaluate impacts of the alternatives and select a preferred alternative. This analysis also includes Wilderness Study Area (WSA) lands with split estate and WSA's less than 5,000 acres. These areas were reinstated for wilderness study as a result of a 1985 U.S. District Court decision.	To comment on the cumulative Statewide impacts and alternatives identified in the EIS. There is a 90-day public comment period including public hearings.	Comments due December 1986
	Final EIS and Wilderness Study Reports (Secretary of the Interior).	To submit Wilderness recommendations to the President.	The Final EIS will be distributed to the public for their information. The Wilderness Study Reports, containing the Secretary's recommendations, will be prepared 30-days following EIS filing.	Before November 1991
Reporting	Presidential Recommendations (President)	To submit wilderness recommendations to the U.S. Congress.	No formal BLM public participation period. Public comment to elected public officials.	Before November 1993
	Final Wilderness Legislation (U.S. Congress)	To designate areas as wilderness or remove them from the wilderness review process.	No formal BLM public participation period. Public comment to elected public officials.	No designated completion date.

REPORTING

The reporting phase consists of actually forwarding, or reporting, suitable and unsuitable recommendations through the Secretary of the Interior and the President to Congress. Mineral surveys required by the Wilderness Act of 1964, EISs, and other data will be submitted with the recommendations.

THE BLM NEW MEXICO WILDERNESS STUDY PLANNING PROCESS

In New Mexico, 47 WSAs are being studied simultaneously as part of a Statewide planning process (see Map 1-1). In accordance with BLM planning regulations, the Category III Management Framework Plan (MFP) Amendment process is being followed. The process provides for site-specific analysis through preparation of WSA-specific WARs and District Environmental Assessments (EAs) which summarize the WARs. Information presented in these documents form the data base for the Statewide Wilderness EIS. The WARs are appended to this EIS as Volumes 2, 3, and 4.

Public participation has played an important role throughout the wilderness review process (see Table 1-2). Public involvement occurred throughout the inventory process, and informal public scoping meetings were held in conjunction with preparation of the WARs. Prior to preparation of the Draft EIS, public scoping meetings were held in Taos, Santa Fe, Albuquerque, Socorro, Las Cruces, and Roswell, New Mexico as well as El Paso, Texas. The results of these scoping meetings and other public participation are summarized in Chapter 5, Consultation and Coordination.

This document includes the recommendations of the BLM New Mexico State Director. These recommendations are based upon the District and Area Manager's recommendations and any new information, including public comment. The State Director's recommendations also take into account the BLM Wilderness Study Criterion which requires consideration of the extent to which wilderness designation of each area under study would contribute to expanding the diversity of the National Wilderness Preservation System (NWPS).

After receiving public comment on the Revised Draft EIS and subsequent revisions, a Final EIS and individual Wilderness Study Reports will be prepared. Recommendations will be made through the Secretary of the Interior to the President, followed by Congressional action. The Final Statewide EIS, and subsequent decisions in conjunction with Congressional actions will serve to amend current BLM land use plans.

PLANNING ISSUE AND CRITERIA

The planning issue for the New Mexico Statewide Wilderness Study is: Which WSAs or portions of WSAs, if any, within New Mexico are suitable to be recommended to Congress for wilderness designation?

To be recommended as suitable for wilderness designation, an area should possess wilderness values and multiple resource benefits capable of balancing the benefits of other resource values and uses which could be foregone due to wilderness designation. In addition, an area recommended as suitable for wilderness designation must be capable of being managed as wilderness over the long-term.

In addressing the planning issue, this EIS and its site-specific WARS consider the following:

- o The wilderness and multiple resource values of each WSA.
- o The manageability of the area as wilderness over the long-term.
- o The mineral and energy resource values present in the WSA.
- o The impacts to other resource values and uses which could be either foregone or adversely affected as a result of wilderness designation.
- o The effect on wilderness values if the area is not designated wilderness.
- o The public comments from interested and affected people at all levels - local, State, regional, and national.
- o The local social and economic effects wilderness designation and nondesignation would create.
- o The resource-related plans and policies of local and State governments, Indian Tribes, and other government agencies.

FORMULATION OF STATEWIDE ALTERNATIVES

Through BLM's scoping, criteria were developed to provide a full spectrum of alternatives (see Chapter 5). A basic objective of each Statewide alternative to be analyzed is to establish an appropriate allocation of resources consistent with the principles of multiple-use and sustained yield. Each alternative provides a different view of what is appropriate. It should be emphasized that by providing a full spectrum of alternatives, the decisionmaker is not constrained from selecting a combination of alternatives. These alternatives and the Proposed Action are described in more detail in Chapter 2.

INTERRELATIONSHIP WITH OTHER PROJECTS

STATE AND LOCAL LAND USE PLANS

During scoping and review of the Draft EIS, no conflicts with State or local plans were identified.

OTHER BLM WSAs IN NEW MEXICO

As a result of accelerated schedules or wilderness studies combined with other agencies, some of the New Mexico BLM WSAs are being studied outside of the Statewide study. These WSAs are listed below along with their status.

Apache Box WSA (AZ-040-076), Grant County, NM: 932 acres

The Apache Box WSA is contiguous to the U.S. Forest Service (USFS) Hell Hole WSA. The USFS originally had the lead for the study; however, Apache Box

was dropped from the study in 1982 as a result of Secretary Watt's decision on areas less than 5,000 acres. The WSA was reinstated in 1985, and because BLM's Safford (Arizona) District has responsibility for management of the area, BLM Arizona will study this WSA as part of a Statewide study of all reinstated areas in Arizona.

Peloncillo Mountains WSA (AZ-040-60), Hidalgo County, NM: 11,299 acres

The Peloncillo Mountains WSA is located in New Mexico and Arizona. Approximately 4,061 acres are located in New Mexico. The WSA is being studied along with other Arizona WSAs by the BLM Safford (Arizona) District. A Draft EIS was released in June 1983 and a final EIS was released in late 1986. The WSA was recommended as nonsuitable for wilderness.

El Malpais Instant Study Area (ISA), Cibola County, NM: 156,373 acres

A Draft EIS was released in August 1981 for El Malpais ISA. Completion of the study awaited consummation of the Navajo Land Exchange, which occurred in 1985. During preparation of this Statewide Wilderness Study, legislation was pending for this ISA.

Guadalupe Canyon ISA, Hidalgo County, NM: 4,146 acres

The Guadalupe Canyon ISA is being studied by BLM jointly with the Coronado National Forest as part of the Forest Service study of the Bunk Robinson Rare II WSA. A final EIS was released by the Coronado National Forest in late 1986, and these lands were recommended as nonsuitable for wilderness.

Mathers ISA, Chaves County, NM: 362 acres

Although the Mathers ISA contains only 362 acres, wilderness study was required because of its natural area designation. An Environmental Assessment/Suitability Report was released for public comment by BLM in March 1979. This area has been recommended as nonsuitable for wilderness designation. Currently, legislative action on this recommendation is pending.

Lonesome Ridge(NM-060-801), McKittrick Canyon (NM-060-146), and Devil's Den (NM-060-145) WSAs, Eddy County, NM: 2,963 acres.

Lonesome Ridge (2,443 acres), McKittrick Canyon (200 acres), and Devil's Den (320 acres) WSAs are contiguous to the Lincoln National Forest Guadalupe Escarpment WSA, which is being studied by the USFS for wilderness. A Final EIS was released in late 1986, and these lands were recommended as nonsuitable for wilderness.

ADMINISTRATIVE APPEALS

All appeals to the Interior Board of Land Appeals over the November 1980 wilderness inventory decisions in New Mexico have been resolved.



CHAPTER 2

Alternatives Including The Proposed Action

CHAPTER 2

ALTERNATIVES INCLUDING THE PROPOSED ACTION

INTRODUCTION

There are two sets of alternatives analyzed in this Environmental Impact Statement (EIS). The first includes the Wilderness Study Area (WSA)-specific alternatives evaluated in the appended Wilderness Analysis Reports (WARs). The WARs evaluate an All Wilderness Alternative and a No Wilderness Alternative for each WSA. For some WSAs, an Amended Boundary Alternative was also evaluated when opportunities existed to minimize resource conflicts or improve manageability. The Amended Boundary Alternative recommends a portion of the WSA as suitable and the remainder as unsuitable for wilderness. The second set of alternatives are the Statewide aggregate alternatives which are presented in this volume.

ALTERNATIVES EVALUATED ON A STATEWIDE BASIS

This EIS addresses 47 WSAs containing 949,919 acres of public land. Each WSA is individually evaluated in the WARs for All Wilderness, No Wilderness, and in some cases, an Amended Boundary. For the Statewide analysis, a range of alternatives was selected using criteria that placed varying emphasis on such factors as protection, manageability, and resource conflicts. The full spectrum of alternatives recommended for wilderness range from 0, 33, 57, 72, and 100 percent of the acreage under wilderness study. A description of the alternatives, including the Proposed Action, is provided in Table 2-1. Acreage differences are displayed in Table 2-2. The management theme and the major aggregate management actions of the Proposed Action and each alternative are described in the following narrative.

PROPOSED ACTION

The Proposed Action recommends all or part of 27 WSAs, totalling 545,072 acres of public land, for wilderness designation. This includes 3,331 acres of non-WSA public land. The Proposed Action recommends for wilderness designation those areas where, in the opinion of the State Director, the quality of wilderness values is capable of balancing the values of existing and potential resources which could be foregone as a result of wilderness designation and where the Bureau of Land Management (BLM) reasonably believes the WSA can be managed as wilderness over the long-term. In areas not designated as wilderness, the goal would be to continue resource management under existing land use plans. A total of 408,178 acres would be recommended unsuitable for wilderness designation and managed under existing land use plans.

The major aggregate management actions under the Proposed Action would be as follows:

- Wilderness management plans would be prepared for 27 wilderness areas. These plans would be based upon the BLM Wilderness Management Policy, and they would be prepared with considerable public involvement. The plans would emphasize site specific detailed management actions that would be

TABLE 2-1
DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

	All Wilderness	Emphasis on a/ Manageability	Proposed Action a/ Wilderness	Conflict Resolution	No Wilderness
Number of areas managed as wilderness	47	36	27	13	0
Number of acres managed as wilderness	949,919	686,118	545,072	315,931	0
Number of acres managed without wilderness protection	0	267,160	408,178	633,988	949,919
Number of acres classified as having a moderate or high economic favor- ability for the following commodi- ties would be closed to exploration and development: b/					
Coal	66,400	133,100	15,800	8,600	0
Oil and Gas	261,600	198,100	196,000	45,500	0
Uranium	38,700	25,200	20,900	0	0
Copper	63,000	56,900	31,200	17,400	0
Lead	33,000	23,300	21,800	17,400	0
Silver	53,000	47,500	21,800	17,400	0
Zinc	33,000	23,300	21,800	17,400	0
Number of acres of inholdings on contiguous lands which attempts would be made to acquire to enhance manageability: State	65,063	53,784	43,804	29,869	0
Private	36,816	15,341	11,851	8,871	0
Number of miles of vehicle ways which would be closed to casual vehicle use and restricted to necessary vehicle use by permit	278	239	195	125	0
Road development projected for unsuitable acreage:					
Number of roads	0	30	49	75	99
Miles of roads	0	74	123	200	254
Acres disturbed	0	222	369	600	762

NOTES: a/ 3,331 acres recommended suitable are non-WSA public land adjacent to existing WSAs.

b/ Some of this acreage overlaps for more than one commodity.

TABLE 2-2
WSAs BY ACREAGE AND ALTERNATIVE

WSAs	ALL WILDERNESS	EMPHASIS ON MANAGEABILITY	PROPOSED ACTION	CONFLICT RESOLUTION	NO WILDERNESS
ALBUQUERQUE DISTRICT					
1. Rio Chama	11,985	5,232	5,232	5,232	0
2. Sabinoso	15,760	0	0	0	0
3. San Antonio	7,050	0	0	0	0
4. Cabezón	8,159	8,159	8,159	0	0
5. Empedrado	9,007	9,007	9,007	0	0
6. Ignacio Chavez <u>a/</u>	33,264	33,609*	33,609*	24,765	0
7. Chamisa <u>a/</u>	13,692	15,758*	15,758*	12,625	0
8. La Lena	10,438	10,438	10,438	0	0
9. Manzano	881	881	881	0	0
10. Ojito	10,903	10,903	10,903	0	0
11. Petaca Pinta	11,668	10,631	10,631	0	0
12. Rimrock	29,818	29,818	29,818	0	0
13. Sand Canyon <u>a/</u>	8,543	7,456*	7,136*	0	0
14. Little Rimrock <u>a/</u>	9,920	9,945*	9,945*	0	0
15. Pinyon <u>a/</u>	12,365	12,413*	12,413*	0	0
A. Ah-shi-sle-pah	6,563	0	0	0	0
LAS CRUCES DISTRICT					
16. Antelope	20,710	9,892	0	0	0
17. Continental Divide	68,761	37,599	37,599	0	0
18. Devil's Backbone	8,904	0	0	0	0
19. Eagle Peak	43,960	17,290	0	0	0
20. Horse Mountain	5,032	4,432	4,432	4,432	0
21. Jornada del Muerto	31,147	31,147	31,147	0	0
22. Mesita Blanca	19,414	9,300	0	0	0
23. Presilla	8,680	0	0	0	0
24. Sierra de las Canas	12,838	12,798	12,798	12,798	0
25. Sierra Ladrónes	45,308	31,804	31,804	0	0
26. Stallion	24,238	24,238	0	0	0
27. Veranito	7,206	7,206	0	0	0
28. Aden Lava Flow	25,287	25,287	25,287	25,287	0
29. Alamo Hueco Mtns.	16,264	0	0	0	0
30. Big Hatchet Mtns.	65,872	45,374	45,374	45,374	0
31. Blue Creek	14,896	0	0	0	0
32. Cedar Mtns.	14,911	14,911	0	0	0
33. Cookes Range	19,608	0	0	0	0
34. Cowboy Spring	6,699	6,699	6,699	6,699	0
35. Florida Mtns.	22,336	22,336	0	0	0
36. Gila Lower Box	8,555	5,835	5,835	5,835	0
37. Las Uvas Mtns.	11,067	0	0	0	0
38. Organ Mtns.	7,283	7,283	7,283	0	0
39. Robledo Mtns.	12,946	12,946	0	0	0
40. West Potrillo Mtns. <u>a/</u>					
41. Mt. Riley <u>a/</u>	157,185	148,540	148,540	148,540	0
42. Brokeoff Mtns.	31,606	13,236	0	0	0
43. Culp Canyon	10,937	0	0	0	0
ROSWELL DISTRICT					
44. Carrizozo Lava Flow <u>a/</u>					
45. Little Black Peak <u>a/</u>	25,312	24,344	24,344	24,344	0
46. Mudgetts	2,941	2,230	0	0	0
SUMMARY					
WSA ACREAGE RECOMMENDED SUITABLE	949,919	682,759	541,741	315,931	0
NON WSA ACREAGE RECOMMENDED SUITABLE	0	3,354	3,331	0	0
TOTAL ACREAGE RECOMMENDED SUITABLE	949,919	686,113	545,072	315,931	0
TOTAL WSA ACREAGE RECOMMENDED NONSUITABLE	0	267,160	408,178	633,988	949,919
PERCENT OF TOTAL WSA ACREAGE RECOMMENDED SUITABLE	100	72	57	33	0

NOTES: * This acreage includes adjacent non-WSA public land.

a/ WSAs 6 and 7; WSAs 13, 14, and 15; WSAs 40 and 41; and WSAs 44 and 45 are adjacent to each other and are being studied jointly.

prescribed to manage the wilderness resources and uses within the wilderness. The management plans would establish clear management objectives and policies to guide future actions. These plans would also identify a sequence for implementation of specific action items aimed at achieving the goal of preserving wilderness values and any goals and objectives that comply with the intentions of the governing legislation. These management plans would be designed to cover a 10-year period and be updated periodically as directed by changes in resource conditions or National direction.

- Efforts to acquire State and private lands within the 27 wilderness areas would be initiated. Acquisition would be voluntary and accomplished primarily through exchange on an equal value for value basis. Approximately 55,655 acres would be involved. Most of the land is State-owned land, and most of this acreage consists of inholdings. It is expected that State land would be acquired within the first few years after designation, while efforts to voluntarily acquire private land would continue over the long-term. Acquisition of these lands could be a long-term effort, because wilderness designation is not contingent upon the acquisition of these lands. Costs to the government would be limited to normal administrative costs.
- The lands that would comprise the 545,072 acres of wilderness would be closed to recreational off-road vehicle (ORV) use. About 195 miles of existing ways would not be available for any vehicle use, except for those users with valid existing rights and where no practical alternatives exist for activities such as maintaining rangeland improvements. In all cases, BLM approval would be required. While accurate use levels on the lands are not known, a very rough estimate of 3,000 vehicle-based user days would be displaced.
- The 545,072 acres of wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. In the wilderness, subject to no unnecessary or undue degradation of wilderness character, development work, extraction, and patenting would be allowed on 284 mining claims provided they are valid. Only a very small percentage of the mining claims, if any, are projected to be valid. Also, 99 post-FLPMA oil and gas leases could be developed subject to nonimpairment standards. The stipulations on these post-FLPMA leases would prevent surface disturbance in wilderness.
- Exploration and development would be precluded on the following acreage classified as having a moderate or high economic favorability for the commodities listed.

196,000 acres	Oil and Gas	21,800 acres	Lead
20,900 acres	Uranium	21,800 acres	Silver
31,200 acres	Copper	21,800 acres	Zinc

- Exploration and development would be allowed without wilderness restrictions on 408,178 acres. This includes the following WSA acreage that is classified as having a moderate or high favorability for the commodities listed.

65,600 acres	Oil and Gas	11,200 acres	Lead
17,800 acres	Uranium	31,800 acres	Silver
31,800 acres	Copper	11,200 acres	Zinc

- Road development resulting primarily from energy and minerals exploration and development is projected over the long-term for the nonsuitable acreage. Approximately 123 miles (49 roads) are projected to be constructed, resulting in a total surface disturbance of 369 acres.
- Livestock grazing use would continue to occur on the 545,072 acres of designated wilderness. The estimated 62,000 animal unit months (AUMs) would remain available to livestock as presently allotted in accordance with existing land use plans and subject to future land use plans. Wilderness designation would restrict vehicle access on 195 miles of existing ways. It is projected that grandfathered uses would be allowed to continue. Grazing at existing levels would be managed through a permit process to allow for maintenance of facilities and emergencies in a manner normally used before wilderness designation. New rangeland developments on these lands would be allowed only where these projects would benefit wilderness values. On the 408,178 acres of nonwilderness, livestock grazing use would continue in accordance with land use plans and operations. Maintenance, as well as potential new developments, would not be subject to wilderness restrictions.

ALL WILDERNESS ALTERNATIVE

All 47 WSAs, totalling 949,919 acres of public land, would be recommended suitable as wilderness under this alternative. Management emphasis would be placed on preserving and improving the wilderness values. Resource use and development would be permitted to the extent compatible with wilderness management. The WARS provide specific management actions for each alternative.

The major aggregate management actions under the All Wilderness Alternative would be as follows:

- Wilderness management plans would be prepared for the 47 wilderness areas. These plans would be based upon the BLM Wilderness Management Policy, and they would be prepared with considerable public involvement. The plans would emphasize site-specific detailed management actions that would be prescribed to manage the wilderness resources and uses within the wilderness. The management plans will establish clear management objectives and policies to guide future actions. These plans will also identify a sequence for implementation of specific action items aimed at achieving the goal of preserving wilderness values and any goals and objectives that comply with the intentions of the governing legislation. These management plans will be designed to cover a 10-year period and be updated periodically as directed by changes in resource conditions or National direction.
- Efforts to acquire State and private lands within the 47 wilderness areas would be initiated. Acquisition would be voluntary and accomplished primarily through exchange on an equal value for value basis. Approximately 101,879 acres would be involved. Most of the land is State-owned, and most of this acreage consists of inholdings.

It is expected that State land would be acquired within the first few years after designation, while efforts to voluntarily acquire private land would continue over the long-term. Acquisition of these lands could be a long-term effort because wilderness designation is not contingent upon the acquisition of these lands. Costs to the Government would be limited to normal administrative costs of processing exchanges.

- The lands that would comprise the 949,919 acres of wilderness would be closed to recreational ORV use. About 278 miles of existing ways would not be available for any vehicle use except for those users with valid existing rights and where no practicable alternatives exist for activities such as maintaining rangeland improvements. In all cases, BLM approval would be required. While accurate use levels are not known, a very rough estimate of 6,500 vehicle-based user days would be displaced.
- The 949,919 acres of wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. In the wilderness, subject to no unnecessary or undue degradation of wilderness character, development work, extraction, and patenting would be allowed on 689 mining claims provided they are valid. Only a very small percentage of the mining claims, if any, are projected to be valid. Also, 161 post-FLPMA oil and gas leases could be developed subject to nonimpairment standards.
- Exploration and development would be precluded on the following acreage classified as having a moderate or high economic favorability for the commodities listed.

261,600 acres	Oil and Gas	33,000 acres	Lead
38,700 acres	Uranium	53,600 acres	Silver
63,000 acres	Copper	33,000 acres	Zinc
66,400 acres	Coal		

- Livestock grazing use would continue to occur on the 949,919 acres of designated wilderness. The estimated 105,000 AUMs would remain available to livestock as presently allotted in accordance with existing land use plans and subject to future land use plans. Wilderness designation would restrict vehicle access on 278 miles of existing ways. New rangeland developments on these lands would be allowed only where these projects would benefit wilderness values. It is projected that grandfathered uses would be allowed to continue. Grazing at existing levels would be managed through a permit process to allow for maintenance of facilities and emergencies in a manner normally used before wilderness designation.

EMPHASIS ON MANAGEABILITY ALTERNATIVE

The primary difference between this alternative and the All Wilderness Alternative is the consideration given to long-term wilderness management. All or portions of 36 WSAs and some contiguous non-WSA public land, totalling 686,113 acres of public land, would be recommended for wilderness designation under this alternative. The areas recommended suitable are those BLM reasonably believes can be managed as wilderness over the long-term. Management emphasis would be placed on preserving and improving wilderness values, while allowing other resource use and development outside the areas designated as wilderness. The WARs provide the site-specific analyses on wilderness manageability, which is the basis of this alternative.

The major aggregate management actions under the Emphasis on Manageability Alternative would be as follows:

- Wilderness management plans would be prepared for the 36 wilderness areas. These plans would be based upon the BLM Wilderness Management Policy, and they would be prepared with considerable public involvement. The plans would emphasize site-specific detailed management actions that would be prescribed to manage the wilderness resources and uses within the wilderness. The management plans would establish clear management objectives and policies to guide future actions. These plans would also identify a sequence for specific action items aimed at achieving the goal of preserving wilderness values and any goals and objectives that comply with the intentions of the governing legislation. These management plans would be designed to cover a 10-year period and be updated periodically as directed by changes in resource conditions or National direction.
- Efforts to acquire State and private lands within the 36 wilderness areas would be initiated. Acquisition would be voluntary and accomplished primarily through exchange on an equal value for value basis. Approximately 69,125 acres would be involved. Most of the land is State-owned, and most of this acreage consists of inholdings. It is expected that State land would be acquired within the first few years after designation, while efforts to voluntarily acquire private land would continue over the long-term. Acquisition of these lands could be a long-term effort because wilderness designation is not contingent upon the acquisition of these lands. Costs to the government would be limited to normal administrative costs of processing exchanges.
- The lands that would comprise the 686,113 acres of wilderness would be closed to recreational ORV use. About 239 miles of existing ways would not be available for any vehicle use except for those users with valid existing rights and where no practicable alternatives exist for activities such as maintaining rangeland improvements. In all cases, BLM approval would be required. While accurate use levels on the lands are not known, a very rough estimate of 3,900 vehicle-based user days would be displaced.
- The 686,113 acres of wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. In the wilderness, subject to no unnecessary or undue degradation of wilderness character, development work, extraction, and patenting would be allowed on 566 mining claims provided they are valid. Only a very small percentage of the mining claims, if any, are projected to be valid. Also, 149 post-FLPMA oil and gas leases could be developed subject to nonimpairment standards. The stipulations on the post-FLPMA leases would prevent surface disturbance in wilderness.
- Exploration and development would be precluded on the following acreage classified as having a moderate or high favorability for the commodities listed.

198,100 acres	Oil and Gas	23,300 acres	Lead
25,200 acres	Uranium	47,500 acres	Silver
56,900 acres	Copper	23,300 acres	Zinc
33,100 acres	Coal		

- Exploration and development would be allowed without wilderness restrictions on 267,160 acres. This includes the following WSA acreage that is classified as having a moderate or high favorability for the commodities listed.

63,500 acres	Oil and Gas	9,700 acres	Lead
13,500 acres	Uranium	6,100 acres	Silver
6,100 acres	Copper	9,700 acres	Zinc
33,300 acres	Coal		

- Road development resulting primarily from energy and minerals exploration and development is projected over the long-term for the nonsuitable acreage. Approximately 74 miles (30 roads) are projected to be constructed, resulting in a total surface disturbance of 222 acres.
- Livestock grazing use would continue to occur on the 682,759 acres of designated wilderness. The estimated 76,000 AUMs would remain available to livestock as presently allotted in accordance with existing land use plans and subject to future land use plans. Wilderness designation would restrict vehicle access on 239 miles of existing ways. It is projected that grandfathered uses would be allowed to continue. Grazing at existing levels would be managed through a permit process to allow for maintenance of facilities and emergencies in a manner normally used before wilderness designation. New rangeland developments on these lands would be allowed only where these projects would benefit wilderness values. On the 291,883 acres of nonwilderness, livestock grazing use would continue in accordance with land use plans and operations. Maintenance, as well as potential new developments, would not be subject to wilderness restrictions.

CONFLICT RESOLUTION ALTERNATIVE

If this alternative were implemented, all or portions of 13 WSAs, totalling 315,931 acres of public land, would be designated as wilderness. Primary emphasis would be placed on making public land and resources available for use and development, while also protecting a portion of the high quality wilderness values. All areas identified for wilderness designation under this alternative have high quality wilderness values, low resource conflicts with wilderness designation, and are capable of being managed as wilderness over the long-term. A total of 633,988 acres of public land would be recommended nonsuitable for wilderness designation and managed under existing land use plans.

The major aggregate management actions under the Conflict Resolution Alternative would be as follows:

- Wilderness management plans would be prepared for the 13 wilderness areas. These plans would be based upon the BLM Wilderness Management Policy and they would be prepared with considerable public involvement. The plans would emphasize site-specific detailed management actions that would be prescribed to manage the wilderness resources and uses within the wilderness. The management plans would establish clear management objectives and policies to guide future actions and would also identify a sequence for specific action items aimed at achieving the goal of preserving

wilderness values and any goals and objectives that comply with the intentions of the governing legislation. These management plans would be designed to cover a 10-year period and be updated periodically as directed by changes in resource conditions or National direction.

- Efforts to acquire State and private lands within the 13 wilderness areas would be initiated. Acquisition would be voluntary and accomplished primarily through exchange on an equal value for value basis. Approximately 38,740 acres would be involved. Most of the land is State-owned, and most of this acreage consists of inholdings. It is expected that State land would be acquired within the first few years after designation, while efforts to voluntarily acquire private land would continue over the long-term. Acquisition of these lands could be a long-term effort because wilderness designation is not contingent upon the acquisition of these lands. Costs to the government would be limited to normal administrative costs of processing exchanges.
- The lands that would comprise the 315,931 acres of wilderness would be closed to recreational ORV use. About 125 miles of existing ways would not be available for any vehicle use except for those users with valid existing rights and where no practicable alternatives exist for activities such as maintaining rangeland improvements. In all cases, BLM approval would be required. While accurate use levels on the lands are not known, a very rough estimate of 1,500 vehicle-based user days would be displaced.
- The 315,931 acres of wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. In the wilderness, subject to no unnecessary or undue degradation of wilderness character, development work, extraction, and patenting would be allowed on 128 mining claims provided they are valid. Only a very small percentage of the mining claims, if any, are projected to be valid. Also, 73 post-FLPMA oil and gas leases could be developed subject to nonimpairment standards. The stipulations on these post-FLPMA leases would prevent surface disturbance in wilderness.
- Exploration and development would be precluded on the following acreage classified as having a moderate or high economic favorability for the commodities listed.

49,900 acres	Oil and Gas	17,400 acres	Lead
0 acres	Uranium	17,400 acres	Silver
17,400 acres	Copper	17,400 acres	Zinc

- Exploration and development would be allowed without wilderness restriction on 633,988 acres. This includes the following WSA acreage that is classified as having a moderate or high economic favorability for the commodities listed.

211,700 acres	Oil and Gas	15,600 acres	Lead
38,700 acres	Uranium	36,200 acres	Silver
45,600 acres	Copper	15,600 acres	Zinc
57,800 acres	Coal		

- Road development resulting primarily from energy and minerals exploration and development is projected over the long-term for the nonsuitable acreage. Approximately 200 miles (75 roads) are projected to be constructed, resulting in a total surface disturbance of 600 acres.
- Livestock grazing use would continue to occur on the 315,931 acres of designated wilderness. The estimated 37,000 AUMs would remain available to livestock as presently allotted in accordance with existing land use plans and subject to future land use plans. Wilderness designation would restrict vehicle access on 125 miles of existing ways. It is projected that grandfathered uses would be allowed to continue. Grazing at existing levels would be managed through a permit process to allow for maintenance of facilities and emergencies in a manner normally used before wilderness designation. New rangeland developments on these lands would be allowed only where these projects would benefit wilderness values. On the 633,988 acres of nonwilderness, livestock grazing use would continue in accordance with land use plans and operations. Maintenance, as well as potential new developments, would not be subject to wilderness restrictions.

NO WILDERNESS ALTERNATIVE

All of the WSAs would be released from further wilderness review and managed under existing land use plans. Primary emphasis would be placed on making public land and resources available for use and development.

The major aggregate management actions under the No Wilderness Alternative would be as follows:

- On the 949,919 acres of nonwilderness, management actions would be determined by existing and future land use plans. Most of this acreage is in the Taos, Socorro, Las Cruces/Lordsburg, and Roswell Resource Areas (RAs), and these RAs are scheduled to or have prepared Resource Management Plans (RMPs).
- It is anticipated that the special values associated with the 949,919 acres would be considered, and for some of this acreage, future management actions could include such action as restricting ORV use, special management area designation, watershed projects, and wildlife projects.
- Because land ownership patterns in and nearby most of the WSAs are predominantly public, it is anticipated that land use plans would identify most of these general areas for retention of public land. This would result in BLM efforts to consolidate public land by acquiring, through exchange, State land in these areas. Acquisition is expected to be a long-term effort, and in some cases, private land may also be acquired through voluntary exchange.
- None of the lands that would comprise the 949,919 acres of nonwilderness would be closed to recreational ORV use. About 465 miles of existing ways would be available for vehicle use.

- Exploration and development on 949,919 acres would be allowed without wilderness restriction. There are 689 mining claims and 161 post-FLPMA oil and gas leases in the WSAs. The following WSA acreage that would be nonwilderness is classified as having a moderate or high favorability for the commodities listed.

261,600 acres	Oil and Gas	33,000 acres	Lead
38,700 acres	Uranium	53,600 acres	Silver
63,300 acres	Copper	33,000 acres	Zinc
66,400 acres	Coal		

- Road development resulting primarily from energy and minerals exploration and development is projected over the long-term for the nonsuitable acreage. Approximately 254 miles (99 roads) are projected to be constructed, resulting in a total surface disturbance of 762 acres.
- In the 949,919 acres of nonwilderness, livestock grazing use would continue in accordance with land use plans and operations. Maintenance, as well as potential new developments, would not be subject to wilderness restrictions.

COMPARISON OF STATEWIDE IMPACTS

Table 2-3 provides a summary of Statewide impacts by alternative.

SUMMARY COMPARISON OF STATEWIDE IMPACTS

TABLE 2-3

STATEWIDE ISSUES	Alternatives				
	PROPOSED ACTION	ALL WILDERNESS	EMPHASIS ON MANAGEABILITY	CONFLICT RESOLUTION	NO WILDERNESS
Wilderness Values	<p>The natural landscape in 27 WSAs (545,072 acres) would be maintained. Improvement in the quality of naturalness would result from closure of 215 miles of existing vehicle ways. Solitude and primitive recreation opportunities would be maintained on 57 percent of the acreage under wilderness review. Recreation opportunities include floatboating, backpacking, big game hunting, rock-climbing, and nature photography. Archaeological sites, raptor habitat, bighorn sheep habitat, opportunities to study melanistic species, and unique vegetative communities would be preserved. There would be 17 new ecosystems added to the NWPS. Impacts on 408,178 acres recommended nonsuitable for wilderness designation would be the same as the No Wilderness Alternative.</p>	<p>The natural landscape in the 47 WSAs (949,919 acres) would be maintained. Improvement in the quality of naturalness would result from closure of 465 miles of existing vehicle ways. In comparison to the Proposed Action, there would be a 40 percent increase in solitude and primitive recreation opportunities maintained. Archaeological sites, raptor habitat, bighorn sheep habitat, opportunities to study melanistic species, and unique vegetative communities would be preserved. There would be 19 new ecosystems added to the NWPS. In addition to the ecosystems included under the Proposed Action, this alternative would include the 12,391-acre Oak Juniper Woodland Scrub Ecosystem in the Alamo Hueco Mountains WSA and 2,524 acres of the Trans Pecos Shrub Savanna Ecosystem in the Alamo Hueco Mountains and Big Hatchet Mountains WSAs.</p>	<p>The natural landscape in 37 WSAs (686,113 acres) would be maintained. This includes the 3,331 acres of nonpublic land added to 5 WSAs to improve the management situation. Improvement in the quality of naturalness would result from closure of 277 miles of existing vehicle ways. Impacts on 267,160 acres recommended nonsuitable for wilderness designation would be the same as the No Wilderness Alternative.</p>	<p>The natural landscape in 13 WSAs (315,931 acres) would be maintained. The represented landscapes are the same as those in the Proposed Action, with the difference being less acreage represented. Improvement in the quality of naturalness would result from closure of 103 miles of existing vehicle ways. Solitude and primitive recreation opportunities maintained would be reduced by 40 percent from the Proposed Action. Under this alternative, archaeological sites, raptor habitat, bighorn sheep habitat, opportunities to study melanistic species, and unique vegetative communities would be preserved. This alternative would add the same ecosystems to the NWPS as in the Proposed Action. Impacts on 633,988 acres recommended nonsuitable for wilderness designation would be the same as the No Wilderness Alternative.</p>	<p>Wilderness values, including naturalness, solitude, and recreation opportunities, would be diminished on 949,919 acres recommended nonsuitable for wilderness designation. This would result from energy and mineral exploration and development, intensive livestock management, and ORV use over the long-term.</p>
Mineral Development	<p>No significant energy resources would be affected by wilderness designation, with the exception of possible uranium deposits in the Sierra Ladrone WSA (approximately 1.5 percent of the New Mexico acreage having a moderate or high potential for uranium). Impacts to metallic and nonmetallic resources would be low. Of the New Mexico acreage having a moderate or high potential, approximately 1 percent of the acreage for copper, molybdenum, and tungsten would be affected, along with 1.5 to 2 percent of the acreage for bismuth, manganese, lead, tellurium, and zinc. Impacts could also result from the withdrawal of acres that have a moderate potential for tin, nickel, and cobalt because these metallic resources have a limited distribution in the United States. No significant nonmetallic minerals would be withdrawn from exploration and development, with the possible exception of 3.3 percent of the New Mexico acreage having a moderate or high potential for barite and 1.5 percent of the New Mexico acreage having a moderate or high potential for fluorite.</p>	<p>Overall, impacts on the development of energy and mineral resources would basically be the same as the Proposed Action. Between 3 and 5 percent of the New Mexico acreage having a moderate and high potential for hosting bismuth, cobalt, copper, lead, gold, manganese, nickel, silver, tellurium, tin, tungsten, vanadium, and zinc would be withdrawn. No significant nonmetallic resources would be affected, with the exception of 7 percent of the New Mexico acreage having a moderate or high potential for barite and 4.5 percent of the New Mexico acreage having a moderate or high potential for fluorite.</p>	<p>The impacts of this alternative on mineral resources are basically the same as the impacts summarized under the All Wilderness Alternative.</p>	<p>Virtually no impacts would occur on energy resource development. The only anticipated impacts associated with other mineral resources involves less than 1.5 percent of the New Mexico acreage having a moderate or high potential for lead, barite, and fluorite.</p>	<p>All interim management restrictions would cease to exist, and all mineral resources would be open to exploration and development, pursuant to existing regulations and prior classifications. In the short-term, activity would continue at a lower degree to that which was occurring prior to WSA designation due to the recent depressed condition of the U.S. mining industry. In the long-term, activity will probably fluctuate, and periods of more intense activity would be expected.</p>
Livestock Grazing	<p>Inconvenience to livestock operators from vehicle restrictions will result on 545,072 acres. Because this represents approximately 0.85 percent of the lands used for livestock grazing in New Mexico and wilderness designation allows continued use of livestock grazing, no significant impacts are expected. For the 408,178 acres recommended nonsuitable, impacts would be similar to the No Wilderness Alternative.</p>	<p>Same as the Proposed Action, except that less than 2 percent (949,919 acres) of lands used for livestock grazing in New Mexico are involved.</p>	<p>Same as the Proposed Action for 686,173 acres recommended as suitable for wilderness. Same as the No Wilderness Alternative for the 267,160 acres recommended nonsuitable.</p>	<p>Same as the Proposed Action for 315,931 acres recommended as suitable. For the 633,988 acres recommended nonsuitable, impacts would be the same as the No Wilderness Alternative.</p>	<p>Vehicle restrictions would not be implemented. This, along with the expected increase in public pressure, is projected to result in increased vandalism to livestock developments and harassment of livestock.</p>



CHAPTER 3

Affected Environment

CHAPTER 3

AFFECTED ENVIRONMENT

INTRODUCTION

This chapter describes the affected environment for those resources considered significant from a Statewide perspective.

As described in Chapter 5, under the heading Results of Scoping, the Statewide issues identified for analysis are: wilderness values, exploration and development of mineral resources, and livestock grazing use levels. Chapter 3 provides cumulative information on the affected environment as it relates to those issues which are of Statewide importance (wilderness values, exploration and development of mineral resources, and livestock grazing use levels). The level of detail in the following discussion is meant to be in proportion to the significance of the impact and the importance of the issue as it relates to the decision making process.

Detail about the individual Wilderness Study Areas (WSAs) is included in the appended Wilderness Analysis Reports (WARs).

WILDERNESS VALUES

The study areas vary widely in size and in other ways, but all meet minimum wilderness characteristics for study consideration. Wilderness characteristics considered in the review include an area's size, naturalness, opportunities for solitude or primitive types of recreation, and special features, such as ecological, geological, or other features of scientific, educational, scenic, or historical value. Other wilderness related values considered in the review include: 1) the benefits to other multiple resource values and uses which wilderness designation could ensure, and 2) the extent to which designation of Bureau of Land Management (BLM) administered lands as wilderness would increase diversity in the National Wilderness Preservation System (NWPS).

SIZE

All WSAs meet one of two size criteria: 1) they are at least 5,000 acres in size; or 2) although less than 5,000 acres in size, they are contiguous to another agency's designated wilderness area. There are 45 WSAs in the New Mexico Statewide Wilderness Study which meet the first criterion and only two (Manzano WSA and Mudgetts WSA) that meet the second criterion. The Manzano WSA is contiguous with the U.S. Forest Service (USFS) Manzano Wilderness, while the Mudgetts WSA is contiguous with the National Park Service (NPS) Carlsbad Wilderness.

NATURALNESS

All of the 47 WSAs are remnants of the natural landscape that existed in primitive times. Most of them are located in the most remote and least developed portions of the State, and they are the most natural parts of the region. The represented landscapes include lava flows, badlands, forested mountains, river canyons, and the more typical desert mountains and lowlands of the Southwest.

While not pristine, the WSAs generally appear to have been affected by the forces of nature, with the imprint of man's work substantially unnoticeable. All of the study areas are, to some degree, grazed by domestic livestock, and most of the marks left by man are associated with the management of those livestock. They include vehicle tracks (or "ways," as they are called in the wilderness review), windmills, buried water pipelines, troughs, dirt tanks, and fences. Some WSAs also contain guzzlers with small aprons used to collect rainwater or snowmelt for wildlife. Evidences of past mining activities, primarily prospecting, remain in some study areas.

Generally, these human imprints are substantially unnoticeable in the WSA as a whole due to topographic or vegetative screening and are visible for only short distances.

OPPORTUNITIES FOR SOLITUDE AND PRIMITIVE TYPES OF RECREATION

All 47 WSAs offer outstanding opportunities for a person to be alone in a natural environment, to be removed from the presence of others in a setting that contains few reminders that others have been there in the past. For many, the vastness of the desert contributes to a sense of solitude that is deeper than that experienced in the more confined setting of a forest.

Military pilots fly low-elevation training missions over several of the WSAs, and the aircraft can momentarily disrupt a visitor's solitude. Flight schedules vary considerably. At times, several aircraft can be seen and heard in a single day, but weeks can go by without any flights.

Most of the WSAs offer outstanding opportunities for primitive types of recreation. Opportunities include rock climbing on Cabezon Peak and the Organ Mountains, floatboating the Chama and Gila Rivers, backpacking in the high mountains of the Big Hatchets, Sierra Ladrones, and Continental Divide WSAs or in the relatively undisturbed and expansive stretch of Chihuahuan Desert in the West Potrillo Mountains/Mount Riley WSAs, and hiking and photography on the stark and pristine lava flows or in the badlands of the Ah-shi-sle-pan WSA.

SPECIAL FEATURES

In many of the WSAs, ecological, geological, and other features of scientific, educational, scenic, or historical value are as significant, in terms of the area's wilderness character, as the opportunities for solitude or primitive types of recreation. The WSAs contain a wide range of such features. Some of those features are:

- Bat Cave, an archaeological research site in the Continental Divide WSA.

- Golden eagle, great horned owl, prairie falcon, and red-tailed hawk nesting sites in the Cabezon, Cooke's Range, Florida Mountains, Brokeoff Mountains, Ignacio Chavez, Sierra Ladrones, and Alamo Hueco Mountains WSA.
- Bighorn sheep in the Big Hatchet Mountains and Alamo Hueco Mountains WSAs and the potential reintroduction of bighorn sheep in the Sierra Ladrones WSA.
- Studies on melanistic species in the lava flows of the Aden Lava Flow, Jornada del Muerto, and Carrizozo Lava Flow/Little Black Peak WSAs.
- Mountain lions in the Alamo Hueco Mountains, Cowboy Spring, Continental Divide, Sierra Ladrones, and Big Hatchet Mountains WSAs.
- Wild and free roaming horses in the Stallion WSA.
- The relatively undisturbed and expansive stretch of Chihuahuan Desert in the West Potrillo Mountains/Mount Riley WSAs.
- The badlands topography and fossils found in the Ah-shi-sle-pah WSA.
- Chama River in the Rio Chama WSA and the Gila River in the Gila Lower Box WSA.
- The 163-acre enclave of western ponderosa pine forest within the Organ Mountains WSA.
- Tinajas Area of Critical Environmental Concern (ACEC), a pictograph site in the Presilla WSA.
- Massacre Peak Petroglyph, Butterfield Trail, and historic town of Cooke's in the Cooke's Range WSA.
- Cultural sites in the Rimrock, Little Rimrock, Sand Canyon, and Pinyon WSAs.
- The largest natural arch in New Mexico within the Rimrock WSA.

DIVERSITY IN THE NATIONAL WILDERNESS PRESERVATION SYSTEM

The three factors to be addressed are: 1) expanding the diversity of natural systems and features, as represented by ecosystems and landforms, 2) assessing the opportunities for solitude or primitive recreation within a day's driving time (5 hours) of major population centers, and 3) balancing the geographic distribution of wilderness areas.

Ecosystem/Landform Diversity

The interrelationship of vegetation and topography form the basis for evaluating ecosystem diversity. The Bailey-Kuchler landform and potential natural vegetation system was used for this evaluation (Bailey 1980; Kuchler 1966).

The Bailey-Kuchler system uses elevation, rainfall, and temperature to describe potential natural vegetation by physiographic province. Table 3-1 displays the acreage of vegetative types represented in the WSAs. The existing and potential ecosystem representations are shown in Table 3-2.

TABLE 3-1
ECOSYSTEMS AND LANDFORMS REPRESENTED IN THE WSAs
(Continued)

ACRES OF VEGETATION REPRESENTED

WSAs BY PROVINCE	Juniper & Mixed Shrub	Mountain Mahogany & Oak Scrub	Oak & Juniper Woodland Scrub	Pinyon & Juniper Woodland	Ponderosa Pine & Douglas Fir	Wesern Ponderosa Forest	Creosote Bush	Grama & Galleta Steppe	Grama, Tobosa & Shrub Steppe	Great Basin Sage	Mesquite & Acacia Savanna	Trans Pecos Shrub Savanna
ROCKY MOUNTAIN FOREST PROVINCE												
Rio Chama				1,000	1,285					9,700		
San Antonio				352						6,698		
COLORADO PLATEAU PROVINCE												
Sabinoso				6,700				9,060				
Cabazon				5,528				2,631				
Empedrado				6,743				2,264				
Ignacio Chavez				19,040	8,800			5,424				
Chamisa				3,650	2,035			8,007				
La Lena				6,025				3,533		880		
Manzano								881				
Ojito				5,756				5,147				
Petaca Pinta								11,668				
Rimrock				5,200	18,044			6,574				
Sand Canyon				4,311	3,722			510				
Little Rimrock				4,594	3,703			1,623				
Pinyon				4,428	5,163			2,774				
Eagle Peak				24,000				19,960				
Mesita Blanca				5,787				13,627				
Sierra de las Canas				4,488								
Sierra												
Ladrones					2,000			4,388				
Stallion				21,238								
Garrizozo												
Lava Flow/ Little												
Black Peak	25,312											
Ah-shi-sle-pah								6,563				

TABLE 3-1
ECOSYSTEMS AND LANDFORMS REPRESENTED IN THE WSAs
(Concluded)

WSAs BY PROVINCE	ACRES OF VEGETATION REPRESENTED											
	Juniper & Mixed Shrub	Mountain Mahogany & Oak Scrub	Oak & Juniper Woodland Scrub	Pinyon & Juniper Woodland	Ponderosa Pine & Douglas Fir	Western Ponderosa Forest	Creosote Bush	Grama & Galleta Steppe	Grama, Tobosa & Shrub Steppe	Great Basin Sage	Mesquite & Acacia Savanna	Trans Pecos Shrub Savanna
MEXICAN HIGHLANDS SHRUB STEPPE PROVINCE												
Alamo Hueco Mountains			12,391				1,665					2,208
Big Hatchet Mountains		28,752					34,046		2,758			316
Cowboy Spring		6,289							410			
UPPER GILA MOUNTAINS FOREST PROVINCE												
Continental Divide				11,112	4,945			52,704				
Horse Mountain				1,970	2,462			600				
Sierra Ladrones				38,920								
Devil's Backbone				1,000				4,000				

Source: BLM WARS, 1988.

TABLE 3-2
EXISTING AND POTENTIAL ECOSYSTEM REPRESENTATION

Landforms/ Ecosystems	Existing Representation in Statutory Wilderness		Representations in Wilderness Endorsed By President - Pending Before Congress		Potential Sources of Representations	
	Number of Areas	Acreage	Number of Areas	Acreage	Number of Areas	Acreage
CHIHUAHUAN DESERT PROVINCE						
Mountain Mahogany						
Oak Scrub	0	0	0	0	4	30,646
Grama Tobosa						
Shrub Steppe	0	0	0	0	17	188,976
Trans-Pecos						
Shrub Savanna	0	0	0	0	8	78,550
Creosote Bush	0	0	0	0	8	81,146
Mesquite Acacia						
Savanna	0	0	0	0	4	43,077
Western Ponderosa						
Forest	0	0	0	0	1	163
ROCKY MOUNTAIN FOREST PROVINCE						
Ponderosa Pine and						
Douglas Fir Forest	3	62,196	3	33,480	1	1,285
Pinyon-Juniper						
Woodland	0	0	0	0	2	1,352
Great Basin						
Sagebrush	0	0	0	0	2	16,398
COLORADO PLATEAU PROVINCE						
Ponderosa Pine and						
Douglas Fir Forest	4	89,636	2	74,856	17	80,155
Pinyon-Juniper						
Woodland	0	0	0	0	15	127,488
Great Basin						
Sagebrush	0	0	0	0	1	880
Grama-Galleta						
Steppe	0	0	0	0	17	104,634
Juniper-mixed						
Shrub	0	0	0	0	3	30,432
MEXICAN HIGHLANDS SHRUB STEPPE						
Oak Juniper Wood-						
land Scrub	0	0	0	0	1	10,751
Mountain Mahogany						
Oak Scrub	0	0	0	0	2	35,041
Creosote Bush	0	0	0	0	2	26,191
Grama-Tobosa Shrub						
Steppe	0	0	0	0	2	3,168
Trans-Pecos Shrub						
Savanna	0	0	0	0	2	336
UPPER GILA MOUNTAIN FOREST PROVINCE						
Ponderosa Pine and						
Douglas Fir Forest	5	231,657	4	41,010	6	35,097
Pinyon-Juniper						
Woodland	0	0	0	0	4	53,002
Grama-Galleta						
Steppe	0	0	0	0	3	57,304

SOURCE: Profile 2, BLM Files (1981).

The following narrative describes the physiographic provinces in which the WSAs occur, with Map 3-1 delineating the provinces.

o Chihuahuan Desert Province

The province is mostly desert. It is characterized by undulating plains with elevations near 4,000 feet, from which somewhat isolated mountains rise 2,000 to 5,000 feet. Few perennial streams occur, with washes containing water only after a rain. Spring and early summer are extremely dry, with summer rains usually beginning in July and continuing through October. Summers are long and hot. Winters are short but may include brief periods when temperatures fall below freezing.

o Colorado Plateau Province

The province consists of tablelands having moderate to considerable relief. The tops of the plateau range in elevation from 5,000 to 7,000 feet. Local relief is from 500 to more than 3,000 feet in some of the deeper canyons that dissect these surfaces. In some sections, volcanic mountains rise 1,000 to 3,000 feet above the plateau surface. Stream valleys are narrow and widely spaced. Due to the generally high altitude, the winters are cold. Summer days are hot, but nights are cool. Summer rains are thunderstorms, but ordinary rains come in winter.

o Rocky Mountain Forest Province

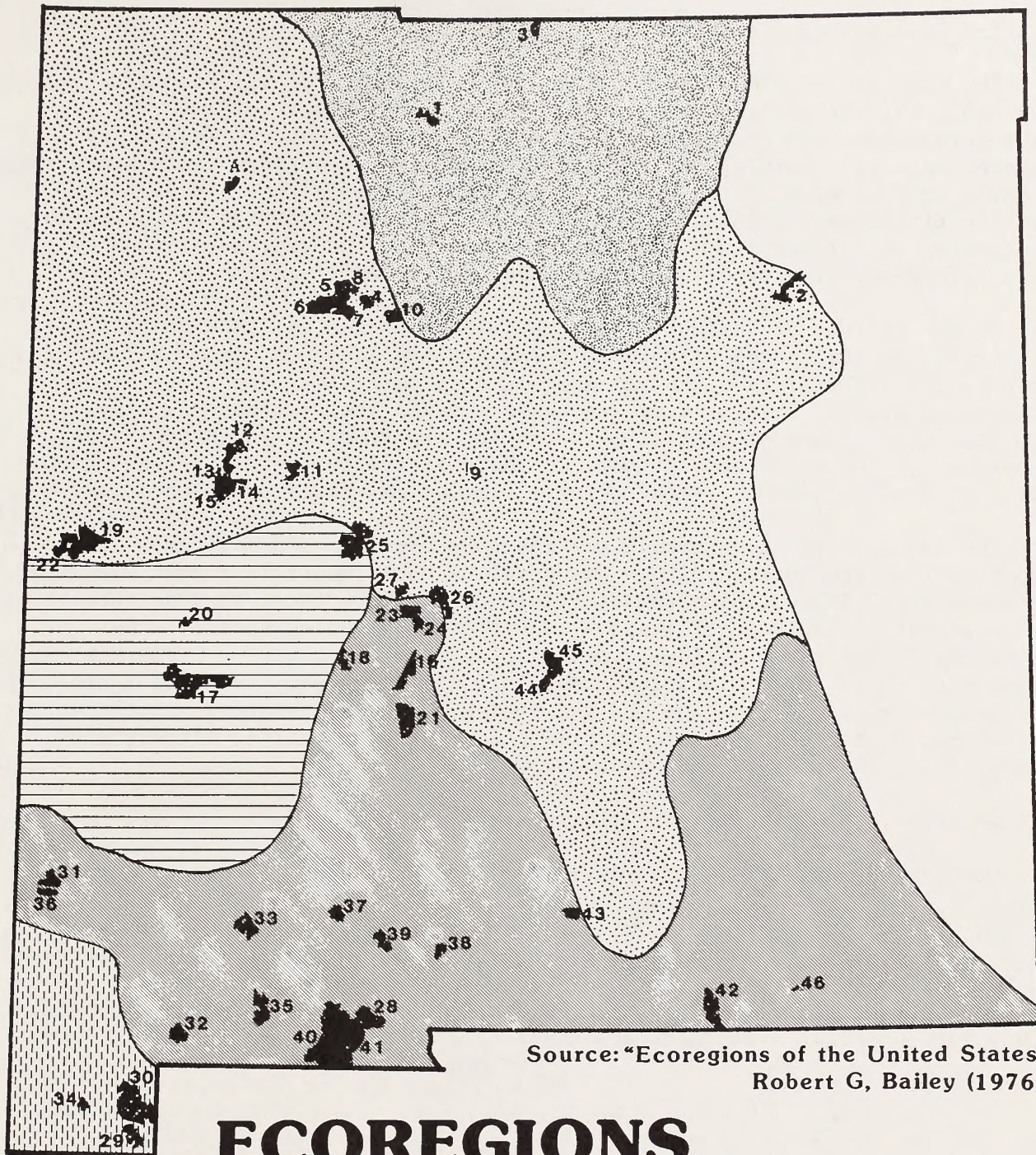
The province is dominated by rugged glaciated mountains, with elevations reaching 14,000 feet. Local relief is between 3,000 and 7,000 feet. Intermontane depressions with floors less than 6,000 feet occur in several areas within the province. The climate is semiarid, with precipitation occurring primarily in the winter. In the highest mountains, a considerable part of the annual precipitation is snow.

o Mexican Highlands Shrub Steppe Province

The province includes grassy high plains and mountains. The plains range in elevation from about 4,000 feet to more than 7,000 feet. Interspersed throughout this province are isolated hills and mountains, some of which reach elevations in excess of 9,000 feet. The climate is semiarid, with most of the precipitation coming in the form of thunderstorms during the summer months. Average temperatures are moderate due to the high elevations, but summer days are hot.

o Upper Gila Mountains Forest Province


This province consists of steep foothills and mountains, but includes some deeply dissected high plateaus. Elevations range from 4,500 feet to 10,000 feet, with some of the mountain peaks rising to 12,600 feet. Relief is greater than 3,000 feet in most areas. Average annual precipitation ranges from 10 to 35 inches. Thunderstorms occur during the summer, with winter precipitation coming as snow.




Source: "Ecoregions of the United States"
Robert G. Bailey (1976)

ECOREGIONS OF NEW MEXICO

LEGEND:

-  Chihuahuan Desert Province
-  Colorado Plateau Province
-  Rocky Mountain Forest Province
-  Mexican Highlands Shrub Steppe Province
-  Upper Gila Mountains Forest Province

 WSA's

Driving Time to Major Population Centers

The WSAs are within a day's driving time (5 hours) of six Standard Metropolitan Statistical Areas (SMSAs) within three states - Santa Fe, Albuquerque, and Las Cruces, New Mexico; El Paso and Lubbock, Texas; and Tucson, Arizona. Several designated and potential wilderness areas are within a day's driving time of the SMSAs. Table 3-3 identifies the approximate driving time from the SMSAs to each WSA. Table 3-4 identifies the number of designated wilderness areas and their total acreage providing solitude or primitive recreation opportunities within a day's driving time of the SMSAs.

In New Mexico, 91 percent of the opportunities for solitude or primitive recreation in designated wilderness areas are available on lands administered by the USFS. The NPS and the BLM administer 6 percent of the designated wilderness areas. Each of these agencies manages their wilderness areas to provide for solitude or primitive recreation opportunities. The remaining 3 percent of the wilderness acreage is administered by the U.S. Fish and Wildlife Service (USFWS), whose primary mission is wildlife conservation.

The majority of the existing wilderness recreation and solitude opportunities are located within areas in the Rocky Mountain Forest Province or the Upper Gila Mountains Forest Province. Both of these regions receive a large amount of their precipitation as winter snow, which restricts most uses primarily to the later spring, summer, and early fall months. The BLM WSAs, because of their lower elevation and milder winters, have a potential use season that would include more of the spring, fall, and winter. Approximately 90 percent of the BLM WSAs are in provinces which have milder winters and, therefore, potentially longer seasons of use.

The Geographic Distribution Of Wilderness

Designated and administratively-endorsed wilderness areas are distributed throughout New Mexico. The four agencies (BLM, NPS, USFWS, and USFS) which manage wilderness areas have administrative responsibility for approximately 22.6 million acres in New Mexico. Approximately 1.5 million acres (7 percent) in New Mexico administered by these agencies have been designated as wilderness (see Table 3-4). Another 1.3 million acres (6 percent) are under study for potential wilderness designation.

TABLE 3-3
DRIVING TIME TO WSAs FOR
SOLITUDE OR PRIMITIVE RECREATION OPPORTUNITIES

Wilderness Study Areas	Approximate Driving Time in Hours From the Standard Metropolitan Statistical Areas					
	Albuquerque New Mexico	Las Cruces New Mexico	Santa Fe New Mexico	Tucson Arizona	El Paso Texas	Lubbock Texas
ALBUQUERQUE DISTRICT						
Rio Chama	3	-	2	-	-	-
Sabinoso	3	-	3	-	-	-
San Antonio	4	-	3	-	-	-
Cabezon	1	-	2	-	-	-
Empedrado	1	-	2	-	-	-
Ignacio Chavez	1	-	2	-	-	-
Chamisa	1	-	2	-	-	-
La Lena	1	-	2	-	-	-
Manzano	1	5	2	-	-	-
Ojito	1	-	2	-	-	-
Petaca Pinta	2	5	3	-	-	-
Rimrock	2	-	3	-	-	-
Sand Canyon	2	-	3	-	-	-
Little Rimrock	2	-	3	-	-	-
Pinyon	2	-	3	-	-	-
Ah-shi-sle-pah	4	-	5	-	-	-
LAS CRUCES DISTRICT						
Antelope	2	3	3	-	4	-
Continental Divide	4	4	5	-	-	-
Devil's Backbone	3	3	4	-	4	-
Eagle Peak	5	-	-	-	-	-
Horse Mountain	5	-	-	-	-	-
Jornada del Muerto	3	3	4	-	4	-
Mesita Blanca	5	-	-	-	-	-
Presilla	2	3	3	-	4	-
Sierra de las Canas	2	3½	3	-	4½	-
Sierra Ladrones	2	4	3	-	5	-
Stallion	4	4	5	-	5	-
Veranito	2	3	3	-	4	-
Aden Lava Flow	5	1	-	-	1	-
Alamo Hueco Mountains	-	3	-	4	4	-
Big Hatchet Mountains	-	3	-	4	4	-
Blue Creek	-	3	-	-	4	-
Cedar Mountains	-	3	-	4	4	-
Cooke's Range	5	2	-	5	3	-
Cowboy Spring	-	4	-	5	5	-
Florida Mountains	-	1½	-	4½	2½	-
Gila Lower Box	-	3	-	4	4	-
Las Uvas Mountains	3	1	4	5	2	-
Organ Mountains	4½	½	-	-	1½	-
Robledo Mountains	3	1	4	5	2	-
West Potrillo/Mount Riley	5	1	-	-	1	-
Brokeoff Mountains	-	4	-	-	3	-
Culp Canyon	4½	3	-	-	2	-
ROSWELL DISTRICT						
Carrizozo Lava Flow/ Little Black Peak	5	5	-	-	4	5
Mudgetts	-	4	-	-	3	4

SOURCE: BLM WARs, 1988.

NOTE: (-) Indicates a driving time greater than 5 hours.

TABLE 3-4
DESIGNATED WILDERNESS AREAS IN NEW MEXICO

WILDERNESS AREA	MANAGING AGENCY	ACRES
Cruces Basin	USFS	18,000
Latir Peak	USFS	20,000
Wheeler Peak	USFS	19,000
Apache Kid	USFS	44,650
Manzano Mountain	USFS	36,970
Sandia Mountain	USFS	37,003
Withington	USFS	19,663
Aldo Leopold	USFS	202,016
Blue Range	USFS	29,304
Gila	USFS	558,065
Capitan Mountain	USFS	35,822
White Mountain	USFS	48,873
Dome	USFS	5,200
San Pedro Parks	USFS	41,132
Chama River Canyon	USFS	50,300
Pecos	USFS	225,333
Bisti	BLM	3,968
De-na-zin	BLM	23,872
Carlsbad	NPS	33,125
Bandelier	NPS	23,267
Bosque del Apache	USFWS	30,287
Salt Creek	USFWS	9,621
TOTAL:		1,514,134

SOURCE: BLM File Data.

EXISTING ENERGY AND MINERAL RESOURCES

INTRODUCTION

This section describes the geologic environment which hosts the 47 WSAs presently being considered for wilderness designation. Emphasis is placed on the known and potential mineral resources associated with the WSAs. In order to provide a Statewide perspective for the known and potential mineral resources of the WSAs, the mineral resources of New Mexico are briefly discussed as well as New Mexico's past and present contribution to the National supply of these mineral resources.

REGIONAL GEOLOGIC SETTING

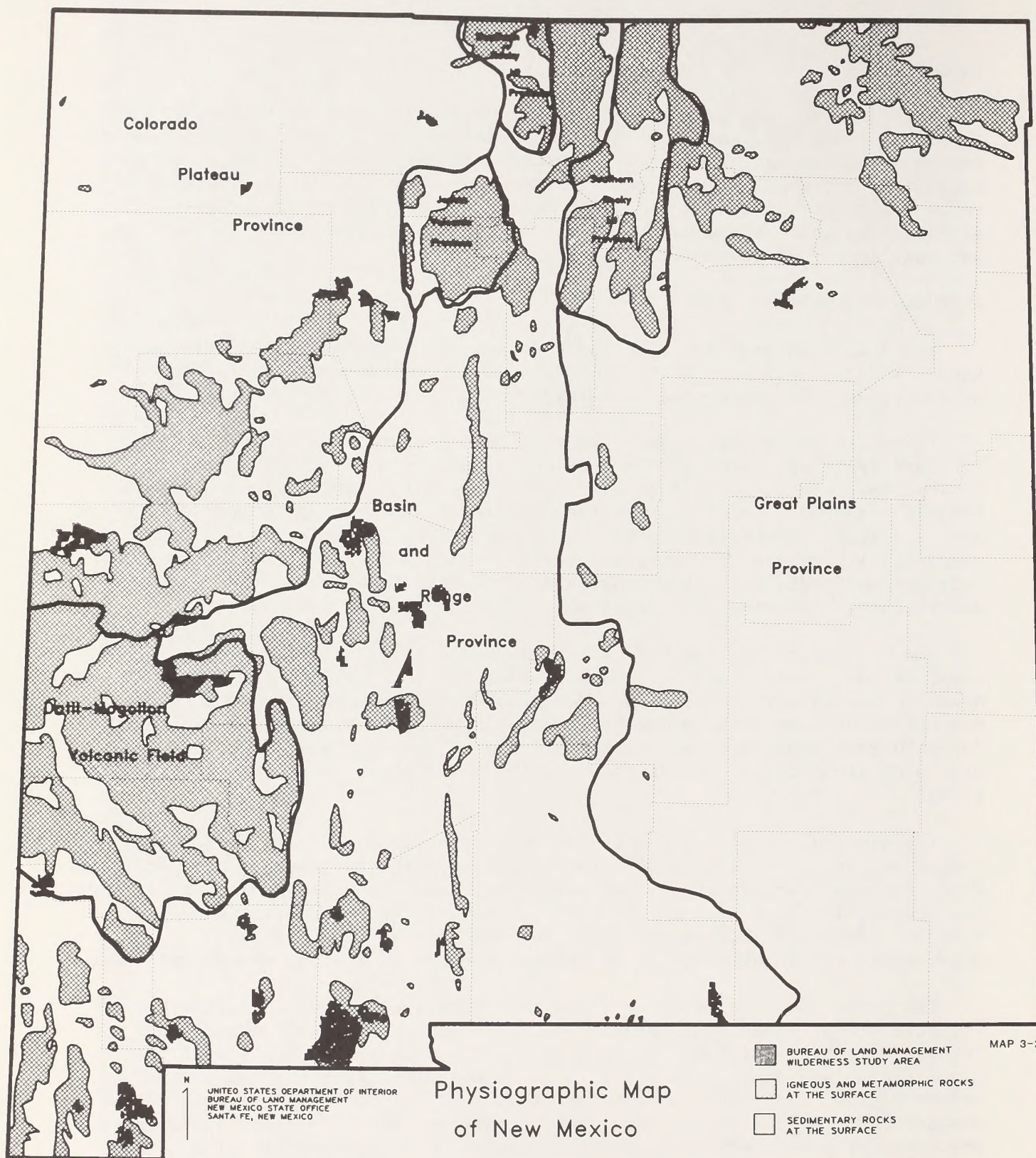
New Mexico encompasses four major geographic provinces; the Basin and Range, Colorado Plateau, Great Plains, and Southern Rocky Mountain (see Map 3-2), each characterized by fairly distinct sets of geologic features.

The Basin and Range province represents the expression of mid to late Tertiary faulting, which produced generally north-south trending, block faulted mountain ranges and basins. The Basin and Range province hosts the largest reserves of base and precious metals of any geographic province in the United States. Approximately 83 percent of our anticipated U.S. copper resources lie within the Basin and Range (Brobst and Pratt, 1973). The Cordilleran foldbelt, Datil-Mogollon volcanic field and Rio Grande rift subprovinces lie within the Basin and Range province of New Mexico.

The Cordilleran foldbelt is a late Mesozoic to early Tertiary compressional feature which contains thrust faulted and intruded Paleozoic and Mesozoic sedimentary rocks. The Aden Lava Flow, Alamo Hueco Mountains, Big Hatchet Mountains, Cedar Mountains, Cowboy Spring, Florida Mountains, and West Potrillo Mountains/Mount Riley WSAs all lie on uplifted blocks or lava flows within or along the margin of the Cordilleran foldbelt (Corbitt and Woodward, 1973).

The Rio Grande rift is a late Tertiary to early Quaternary extensional feature which approximately bisects New Mexico north to south. The Aden Lava Flow, Robledo Mountains, Las Uvas Mountains, Manzano, Organ Mountains, Jornada del Muerto, Antelope, Devil's Backbone, Presilla, Sierra de las Canas, Veranito, Stallion, Sierra Ladrones, San Antonio, and West Potrillo Mountains/Mount Riley WSAs all lie along or close to the Rio Grande rift zone.

The Datil-Mogollon volcanic field is a relatively uneroded Tertiary volcanic transitional zone between the Basin and Range province and the Colorado Plateau province. Cooke's Range WSA, a southern extension of the Black Range, and Blue Creek and Gila Lower Box WSAs lie along the southern margin of the Datil-Mogollon volcanic field. Horse Mountain and Continental Divide WSAs are located on large extinct stratovolcanoes within the northern portion of the Datil-Mogollon volcanic field, on opposing sides of a large, anomalous, east-to-west trending down faulted basin. Mesita Blanca and Eagle Peak WSAs lie along the northern margin of the Datil-Mogollon volcanic field and are underlain by partially basalt capped Mesozoic sediments typical of the Colorado Plateau.



The Carrizozo Lava Flow/Little Black Peak, Culp Canyon, and Brokeoff Mountains WSAs lie within the eastern most portion of the Basin and Range province.

The Colorado Plateau province represents a large intracratonic basin with a thick, relatively flat lying section of continental and marine Paleozoic and Mesozoic sedimentary rocks. It is predominately characterized by mesas, plains, and canyon lands. The most significant feature of the southern most portion of the Colorado Plateau province is the San Juan Basin. The major portion of the San Juan Basin lies in northwestern New Mexico. The San Juan Basin hosts nationally important reserves of oil and gas, uranium, and coal. The Ah-sni-sle-pah, Cabezon, Chamisa, Empedrado, Ignacio Chavez, La Lena, Little Rimrock, Ojito, Petaca Pinta, Pinyon, Rimrock, Rio Chama, and Sand Canyon WSAs lie along the eastern margin of the San Juan Basin.

The Great Plains province in New Mexico is generally surfaced in Cenozoic continental sediments. Thick sections of Mesozoic and Paleozoic sedimentary rocks lie within the subsurface of the Great Plains. The Permian Basin in southeastern New Mexico is a significant oil and gas production area. The Mudgetts WSA lies on the western margin of the Permian Basin. Surficial late Cenozoic volcanic deposits occur within the northeastern most portion of New Mexico's Great Plains. The Sabinoso WSA lies within the north central part of New Mexico's Great Plains just south of these late Cenozoic volcanic deposits.

The Southern Rocky Mountain province projects into the north central portion of New Mexico. The Rocky Mountains are characterized by folded, thrust, intruded, and uplifted Paleozoic sedimentary and Precambrian crystalline rocks. The Rocky Mountains are the result of late Mesozoic through Tertiary tectonic activity known as the Laramide Orogeny. Although none of the WSAs under study lie within this province, the San Antonio WSA lies along the interface of the Rio Grande rift zone and the Southern Rocky Mountain province.

Specific geologic descriptions of each WSA are included within the appended WARs.

ENERGY AND MINERAL RESOURCE PRODUCTION IN NEW MEXICO

New Mexico's diverse geologic environments host a wide variety of mineral resources. New Mexico presently holds the U.S. production record for uranium. New Mexico also ranks fourth and seventh in oil and gas production, respectively (New Mexico Oil and Gas Association (NMOGA), 1983). Although New Mexico has the eighth largest coal resources in the U.S. (Brobst and Pratt, 1973), New Mexico presently ranks twelfth in U.S. coal production.

New Mexico at various times has been one of the Nation's top five producers of beryllium concentrates, carbon dioxide, copper, fluorspar, helium, iceland spar (optical calcite), lithium minerals, manganese concentrates, sheet mica, molybdenum, perlite, potash, pumice, tantalum concentrates, tin, vanadium ore, and zinc (Geller, 1983). As of 1965, over 2.5 million tons of copper, 1.3 million tons of zinc, 75 million ounces of silver, 2.25 million ounces of gold, and 337 thousand tons of lead were produced from New Mexico's mines (Geller, 1983).

These statistics clearly indicate that New Mexico has been a leading domestic source of a diverse range of mineral commodities. Tables A-1 through A-3 in Appendix A exhibit New Mexico's recent standing in domestic mineral production. These tables also provide some indication of the National significance of the mineral resources which are potentially impacted under the proposed alternatives. Due to the recent depressed conditions experienced by New Mexico's mineral industries, especially in the uranium and base metal operations, the production figures in Appendix A are not wholly representative of New Mexico's National importance in respect to potential mineral resources.

POTENTIAL MINERAL RESOURCES IN NEW MEXICO

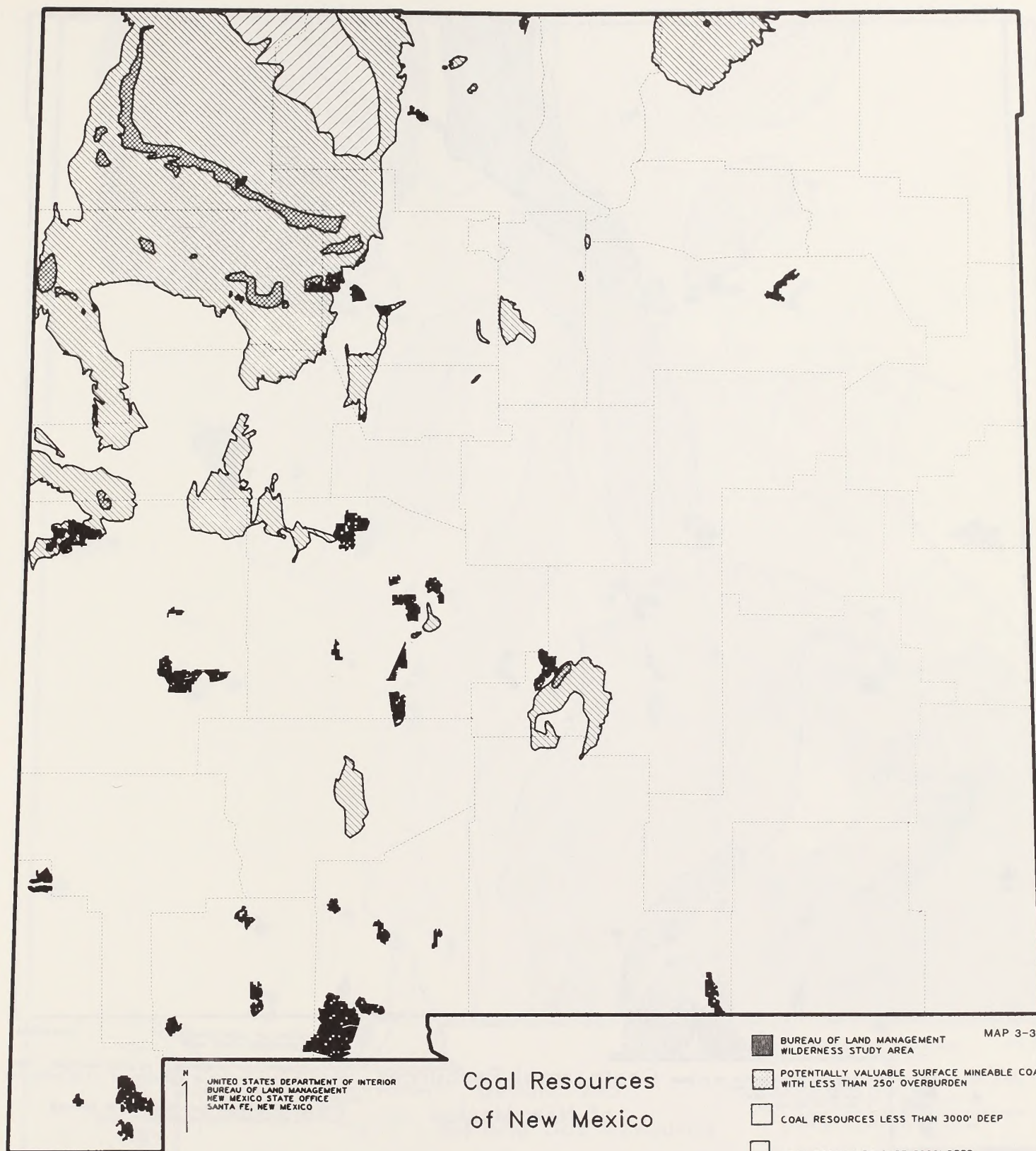
The past mineral production history of New Mexico supports the observation that very significant areas of economic mineral potential presently exist in New Mexico. Maps 3-3 through 3-7 illustrate the Statewide potential for the various commodities potentially impacted under the proposed alternatives. Unfortunately, since Maps 3-3 through 3-7 were developed primarily by other authors for Statewide purposes, the broad mineral classification systems of these maps do not necessarily correlate to the site-specific system used by the BLM in evaluating mineral potential in the individuals WSAs.

MINERAL RESOURCES POTENTIAL OF THE WSAs

As part of the wilderness study process, preliminary mineral resource assessments were prepared by or for the BLM for each WSA. The New Mexico Bureau of Mines and Mineral Resources (NMBMMR) prepared a rigorous, in-depth analyses of the mineral potential of the Sierra Ladrone and Petaca Pinta WSAs. The NMBMMR supported their literature search and analysis with some field examinations. Geo-Explorers, Inc. of Denver prepared preliminary mineral resource assessments for most of the WSAs in the Socorro, Roswell, and Rio Puerco Resource Areas (RAs) under contract with the BLM. These assessments were basically literature searches and involved only cursory field examinations. The RA geologists from White Sands, Las Cruces/Lordsburg, Socorro, Rio Puerco, and Taos also prepared mineral assessments with the aid of some previously prepared planning inventories and assessments. Results of these mineral resource assessments are condensed in each of the appended WARs. The mineral potential classification system utilized in the WARs is described below.

Classification of Mineral Resources

Often, public attention is focused on current economic availability of known energy or nonenergy mineral deposits. However, long-term planning must include some indication of the potential for discovering mineral resources in areas that currently have no known mineral deposits or whose known deposits are now considered uneconomic. New geologic data, technological advances, and changes in economic conditions can generate interest in areas that have previously been considered unfavorable.



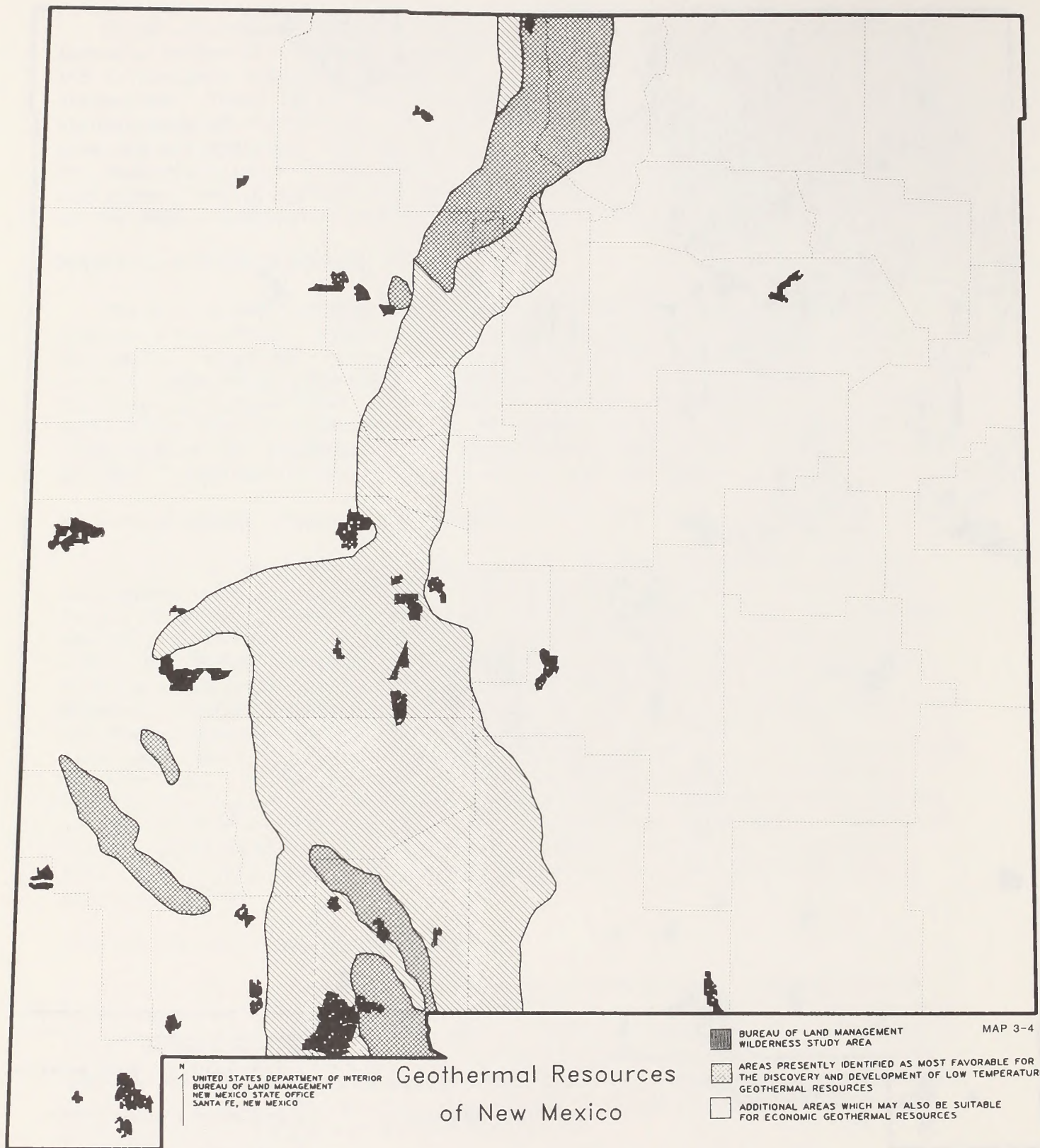
UNITED STATES DEPARTMENT OF INTERIOR
BUREAU OF LAND MANAGEMENT
NEW MEXICO STATE OFFICE
SANTA FE, NEW MEXICO

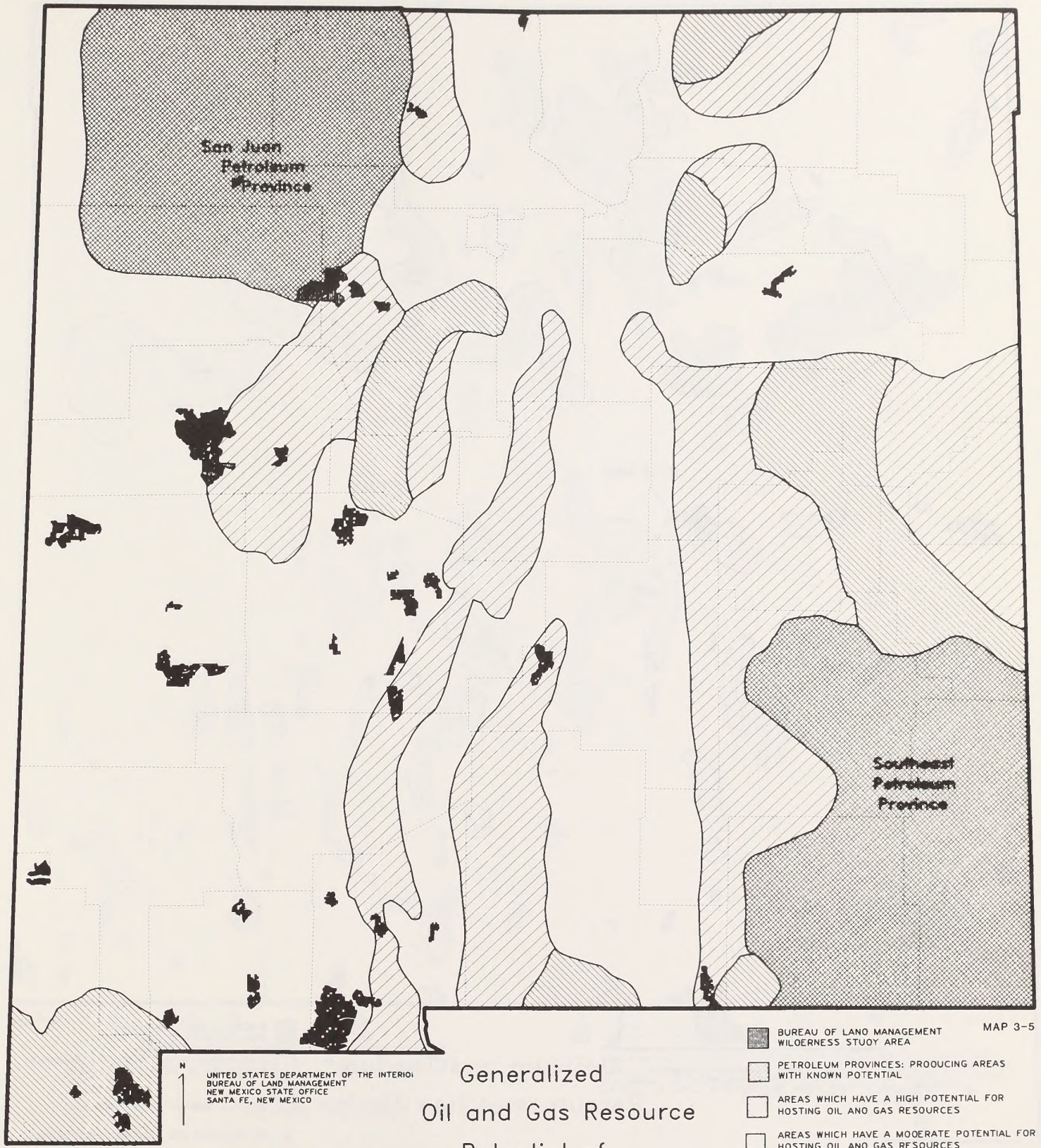
Coal Resources of New Mexico

- MAP 3-3
- BUREAU OF LAND MANAGEMENT WILDERNESS STUDY AREA
 - POTENTIALLY VALUABLE SURFACE MINEABLE COAL WITH LESS THAN 250' OVERBURDEN
 - COAL RESOURCES LESS THAN 3000' DEEP
 - COAL RESOURCES OVER 3000' DEEP

May 1985
This plot produced using
MOSS Digital Graphics.

Modified from Energy Resources
Map of New Mexico, 1981: USGS & NMBMR



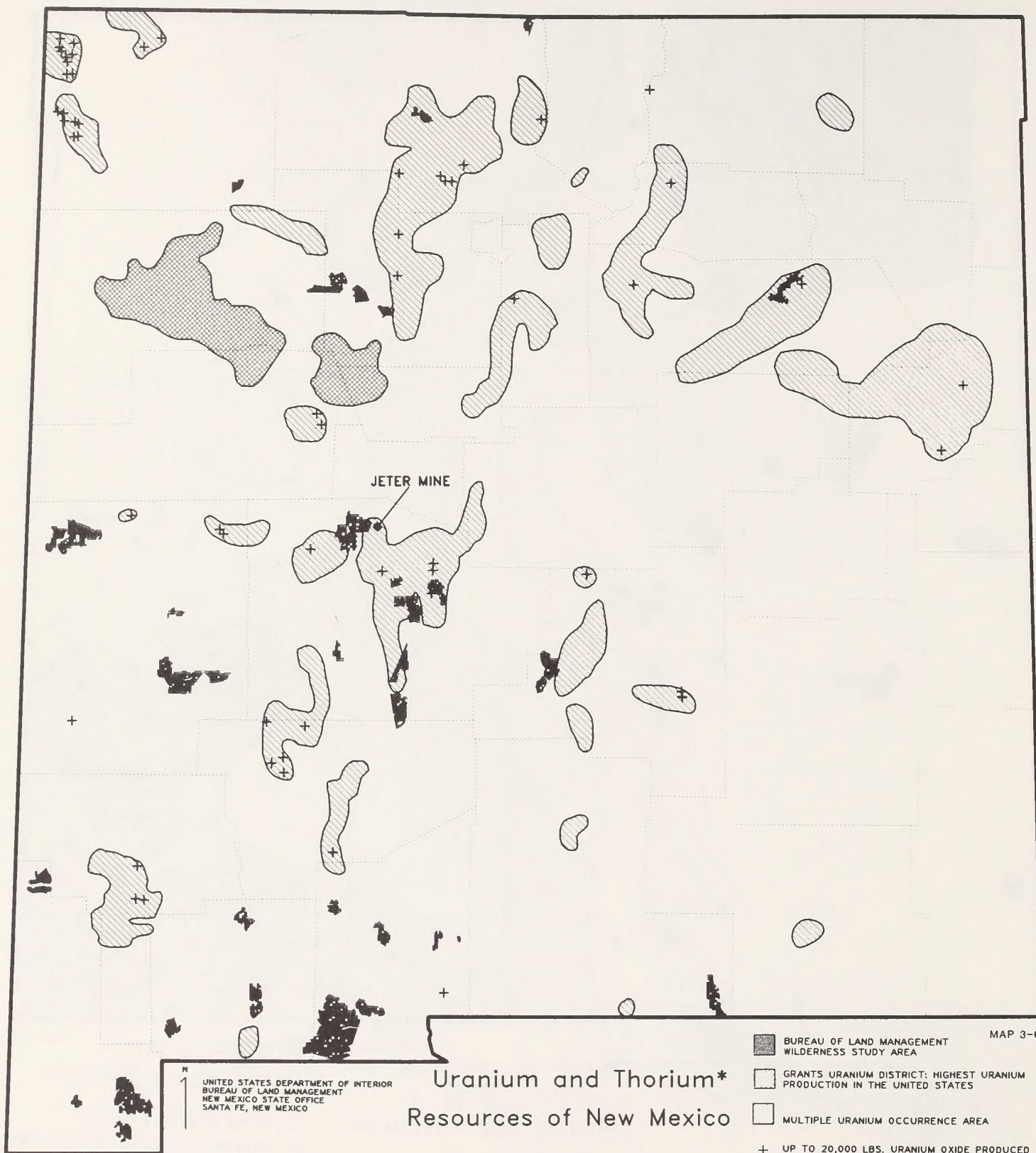


Generalized Oil and Gas Resource Potential of New Mexico

- MAP 3-5
- BUREAU OF LAND MANAGEMENT
WILDERNESS STUDY AREA
 - PETROLEUM PROVINCES: PRODUCING AREAS
WITH KNOWN POTENTIAL
 - AREAS WHICH HAVE A HIGH POTENTIAL FOR
HOSTING OIL AND GAS RESOURCES
 - AREAS WHICH HAVE A MODERATE POTENTIAL FOR
HOSTING OIL AND GAS RESOURCES
 - AREAS WHICH HAVE A LOW TO ZERO POTENTIAL
FOR HOSTING OIL AND GAS RESOURCES

Modified from Foster (1974)

May 1985
This plot produced using
MOSS Digital Graphics.



MAP 3-6

■ BUREAU OF LAND MANAGEMENT
WILDERNESS STUDY AREA

▨ GRANTS URANIUM DISTRICT: HIGHEST URANIUM
PRODUCTION IN THE UNITED STATES

□ MULTIPLE URANIUM OCCURRENCE AREA

+ UP TO 20,000 LBS. URANIUM OXIDE PRODUCED

• 20,000 TO 200,000 LBS. URANIUM OXIDE PRODUCED

Modified from McLemore (1983)

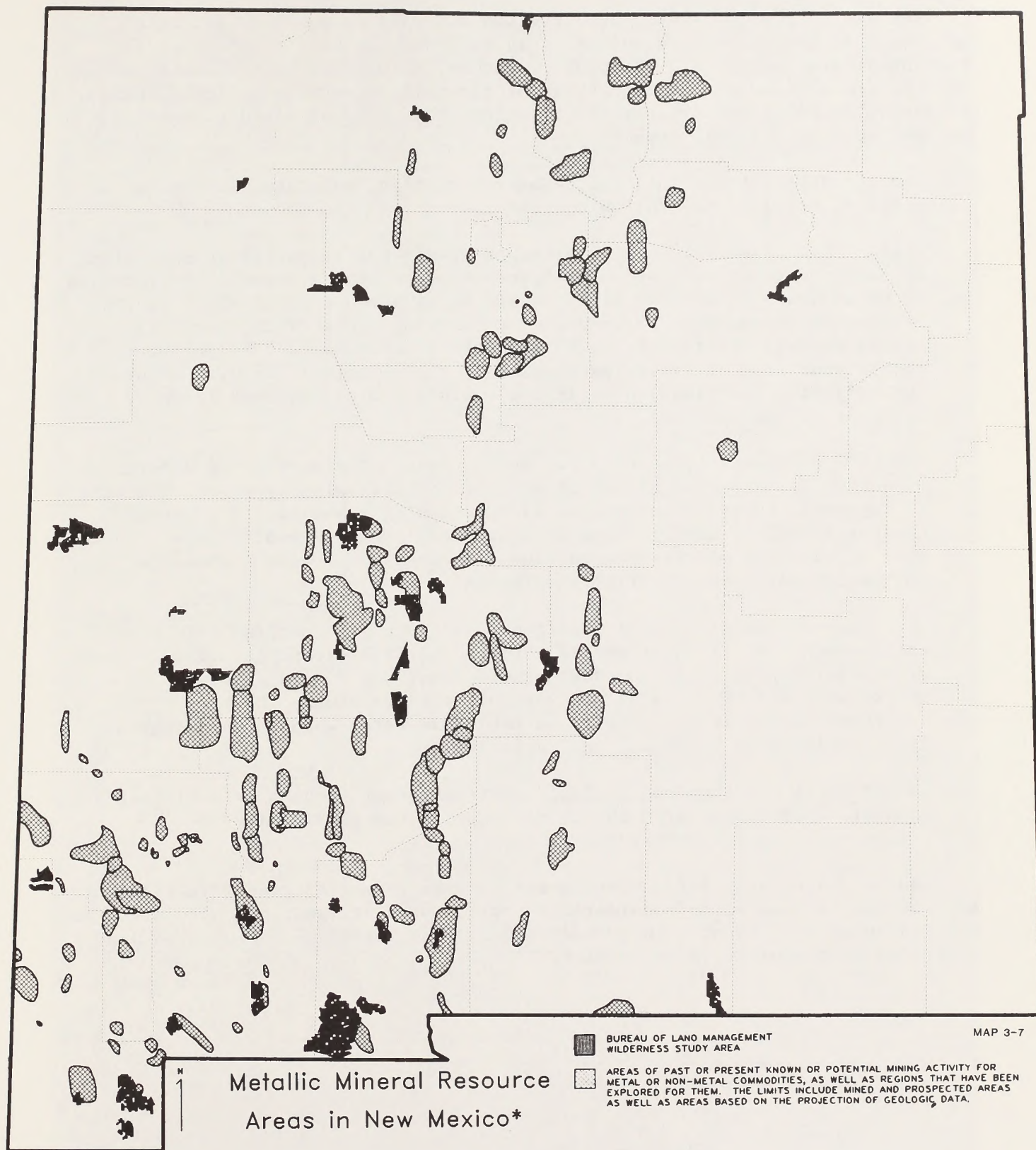
Uranium and Thorium* Resources of New Mexico

UNITED STATES DEPARTMENT OF INTERIOR
BUREAU OF LAND MANAGEMENT
NEW MEXICO STATE OFFICE
SANTA FE, NEW MEXICO

10 0 10 20 30 40 Miles

*Small percentages of recoverable
Molybdenum and Vanadium ore are
often associated with sedimentary
Uranium deposits within the San
Juan Basin.

May 1985
This plot produced using
MOSS Digital Graphics.



May 1985
This plot produced using
MOSS Digital Graphics.

*This Map Includes Associated Minerals such as Barite and Fluorite, but it does not include Uranium Resources.

Modified from Hutchins (1983), New Mexico Metal Resources Map:
NMBMR (1958), Mineral and Water Resources of New Mexico:
USGS, et al (1965)

The classification system used for the BLM WARs is based on geologic knowledge of the mineral resources of an area and the area's potential for hosting mineral resources. Mineral resources, as used in this classification system, are defined as concentrations of naturally occurring solids, liquids, or gases, either known or surmised to exist, that are, or could potentially become, economic mineral deposits.

The classification of mineral resources as high, moderate, low or no potential is based on the following factors:

High - High potential for the presence of mineral resources is indicated by one or more of the following types of supporting evidence: 1) location in or adjacent to a known mining district or known leasing area; 2) past or present production; 3) presence of existing mines or deposits; 4) strong geologic similarity to known mineral deposits; and 5) positive indications from drilling, geophysical, or geochemical surveys, or other investigative techniques used in the exploration of involved lands or adjacent or nearby lands.

Moderate - Moderate potential for the presence or discovery of mineral resources is indicated by one or more of the following types of evidence: 1) reported mineral occurrences; 2) some geologic similarity to known mineral deposits; and 3) encouraging indications from exploration. In the case of saleable mineral commodities, the area has moderate potential only if the commodity is potentially marketable.

Low - Low potential for the presence or discovery of mineral resources exists when: 1) exploration has revealed no significant geologic evidence of mineral deposits; 2) no known occurrences; and 3) the geologic environment has little similarity to other known mineral hosting environments or, in the case of saleable minerals, when known deposits have little or no potential for marketability.

No Potential - Either the geologic environment or present or anticipated economic conditions, or both, do not support the possibility of discovering mineral resources.

Tables 3-5 through 3-7 summarize the mineral potential classifications of each of the 47 WSAs being considered for wilderness designation. The acreages associated with areas of high to moderate mineral potential in each WSA are exhibited by commodity in Appendix A.

TABLE 3-5
ENERGY MINERAL POTENTIAL BY WSA

	Coal	Geothermal	Oil and Gas	Uranium
ALBUQUERQUE				
Rio Chama	L		L	L
Sabinoso			L	L
San Antonio			L	L
Cabazon		L	M	L
Empedrado	H-M		H-M	L
Ignacio Chavez	H		H-M	L
Chamisa	M-L		M-L	
La Lena	H-L		H-M	L
Manzano			M	
Ojito		M-L	M	M
Petaca Pinta			M	L
Rimrock	L		M	L
Sand Canyon	L		M	L
Little Rimrock	L		M	L
Pinyon	L		M	L
Ah-shi-sle-pah	H		M	L
LAS CRUCES DISTRICT				
Antelope	L	L	L	
Continental Divide			M	L
Devil's Backbone		L	L	L
Eagle Peak	M		L	M
Horse Mountain			M	L
Jornada del Muerto		L	M	
Mesita Blanca	L		L	L
Presilla		M	L	M-L
Sierra de las Canas		M	L	L
Sierra Ladrones		L	L	H-L
Stallion			L	L
Veranito		M	L	M-L
Aden Lava Flow		L	L	
Alamo Hueco Mountains		L	L	
Big Hatchet Mountains			M-L	
Blue Creek		L		
Cedar Mountains			L	
Cooke's Range				L
Cowboy Spring			L	
Florida Mountains			L	L
Gila Lower Box		L		
Las Uvas Mountains		L		
Organ Mountains		L		
Robledo Mountains		M-L	L	
West Potrillo Mtns. and Mt. Riley		L	M-L	
Brokeoff Mountains			L	
Culp Canyon			M	
ROSWELL DISTRICT				
Little Black Peak and Carrizozo Lava Flow		L	L	L
Mudgetts			H	

SOURCE: BLM WARs, 1988.

NOTE: Ranges indicate 2 or 3 different potentials within each WSA boundary.

L - Low

M - Moderate

H - High

Blank - Very Low or No Potential

TABLE 3-6
METAL POTENTIAL BY WSA

	Bismuth	Cobalt	Copper	Gold	Iron	Lead	Manganese	Molybdenum	Nickel	Silver	Tin	Tungsten	Zinc
ALBUQUERQUE DISTRICT													
Rio Chama			L			L		L					L
Sabinoso													
San Antonio			L			L		L					L
Cabezon													
Empedrado													
Ignacio Chavez													
Chamisa													
La Lena													
Ojito													
Petaca Pinta													
Rimrock													
Sand Canyon													
Little Rimrock													
Pinyon													
Ah-shi-sle-pah													
LAS CRUCES DISTRICT													
Antelope													
Continental Divide			L	L		L		L		L	M	L	L
Devil's Backbone			L	L		L		L		L		L	L
Eagle Peak													
Horse Mountain			M	M		M		M		M		M	M
Jornada del Muerto													
Mesita Blanca													
Presilla			M-L			M-L				M-L			M-L
Sierra de las Canas			M			M				M			M
Sierra Ladrone	L	M	M-L			M-L	L		M	M-L		L	M-L
Stallion			M			L				M			L
Veranito							L			L			
Aden Lava Flow													
Alamo Hueco Mtns.							L						
Big Hatchet Mtns.			M	M		M				M			M
Blue Creek							L						
Cedar Mountains			L	L		L				L			L
Cooke's Range			H-L	H-L		H-L		H-L		H-L			H-L
Cowboy Spring			L	L		L		L		L			L
Florida Mountains			H-L	H-L		H-L	M	H-L		H-L			H-L
Gila Lower Box							L						
Las Uvas Mountains													
Organ Mountains			H-L	H-L		H-L		H-L		H-L		H-L	H-L
Robledo Mountains					L		L						
West Potrillo Mtns.													
and Mt. Riley			L	L		L		L		L			L
Brokeoff Mountains													
Culp Canyon													
ROSSELL DISTRICT													
Little Black Peak &													
Carriazo Lava Flow			L	L	L	L		L		L			L
Mudgetts													

SOURCE: BLM WARS, 1988.

NOTES: L - Low
M - Moderate
H - High
Blank - Very Low or No Potential

TABLE 3-7
INDUSTRIAL MINERALS POTENTIAL BY USA

	Aggregates		Sand & Gravel	Barite	Building Stone	Fluorspar	Gypsum	High Calcium Limestone	High Magnesium Dolomite	Humates	Kaolin	Salt	Zeolites
	Clinders/Scoria	Crushed Rock											
ALBUQUERQUE DISTRICT													
Rio Chama		L	L										
Sabinoso		L	L										
San Antonio													
Cabezon													
Empedrado										H-M			
Ignacio Chavez										H			
Chamisa										M-L			
La Lena										H-L			
Manzano			L										
Ojito													
Petaca Pinta													
Rimrock										L			
Sand Canyon										L			
Little Rimrock										L			
Pinyon										L			
Ah-shi-sle-pah										L			
LAS CRUCES DISTRICT													
Antelope													
Continental Divide													
Devil's Backbone											L		
Eagle Peak	M-L		M-L										
Horse Mountain													
Jornada del Muerto													
Mesita Blanca	H-L		M-L										
Presilla			M-L	M-L			M-L						
Sierra de las Canas				M			M	L					
Sierra Ladrone				M-L			L	M					
Stallion				L			L	L					
Veranito			M-L								L		
Aden Lava Flow					H-L								L
Alamo Hueco Mtns.													
Big Hatchet Mtns.						L	M-L	L					
Blue Creek													
Cedar Mtns.													
Cooke's Range					L								
Cowboy Spring													
Florida Mtns.				L									
Gila Lower Box							M-L						
Las Uvas Mtns.													L
Organ Mountains													L
Robledo Mountains													
West Potrillo Mtns.			L		H-L			H-L	M-L				
and Mt. Riley	H-L												
Brokeoff Mountains			L		L							L	
Culp Canyon			L										
ROSSELL DISTRICT													
Little Black Peak &													
Carrizozo Lava Flow	L		L	L		L	L						
Mudgetts		L											

SOURCE: BLM WARS, 1988.

NOTES: L - Low
M - Moderate
H - High

TABLE 3-6
METAL POTENTIAL BY WSA

	Bismuth	Cobalt	Copper	Gold	Iron	Lead	Manganese	Molybdenum	Nickel	Silver	Tin	Tungsten	Zinc
ALBUQUERQUE DISTRICT													
Rio Chama			L			L		L					L
Sabinoso													
San Antonio			L			L		L					L
Cabezon													
Empedrado													
Ignacio Chavez													
Chamisa													
La Lena													
Ojito													
Petaca Pinta													
Rimrock													
Sand Canyon													
Little Rimrock													
Pinyon													
Ah-shi-sle-pah													
LAS CRUCES DISTRICT													
Antelope													
Continental Divide			L	L		L		L		L	M	L	L
Devil's Backbone			L	L		L		L		L		L	L
Eagle Peak													
Horse Mountain			M	M		M		M		M		M	M
Jornada del Muerto													
Mesita Blanca													
Fresilla			M-L			M-L				M-L			M-L
Sierra de las Canas			M			M				M			M
Sierra Ladrones	L	M	M-L			M-L	L		M	M-L		L	M-L
Stallion			M			L				M			L
Veranito						L				L			
Aden Lava Flow													
Alamo Hueco Mtns.							L						
Big Hatchet Mtns.			M	M		M				M			M
Blue Creek							L						
Cedar Mountains			L	L		L				L			L
Cooke's Range			H-L	H-L		H-L		H-L		H-L			H-L
Cowboy Spring			L	L		L		L		L			L
Florida Mountains			H-L	H-L		H-L	M	H-L		H-L			H-L
Gila Lower Box							L						
Las Uvas Mountains													
Organ Mountains			H-L	H-L		H-L		H-L		H-L		H-L	H-L
Robledo Mountains					L								
West Potrillo Mtns. and Mt. Riley			L	L		L		L		L			L
Brokeoff Mountains													
Gulp Canyon													
ROSWELL DISTRICT													
Little Black Peak & Carrizozo Lava Flow			L	L	L	L		L		L			L
Mudgetts													

SOURCE: BLM WARS, 1988.

NOTES:
L - Low
M - Moderate
H - High
Blank - Very Low or No Potential

TABLE 3-7
INDUSTRIAL MINERALS POTENTIAL BY USA

	Aggregates		Sand & Gravel	Barite	Building Stone	Fluorspar	Gypsum	High Calcium Limestone	High Magnesium Dolomite	Humates	Kaolin	Salt	Zeolites
	Cinders/Scoria	Crushed Rock											
ALBUQUERQUE DISTRICT													
Rio Chama		L	L										
Sabinoso		L	L										
San Antonio													
Cabezon													
Empedrado										H-M			
Ignacio Chavez										H			
Chamisa										M-L			
La Lena										H-L			
Manzano			L										
Ojito													
Petaca Pinta													
Rimrock										L			
Sand Canyon										L			
Little Rimrock										L			
Pinyon										L			
Ah-shi-sle-pah										L			
LAS CRUCES DISTRICT													
Antelope													
Continental Divide													
Devil's Backbone											L		
Eagle Peak	M-L		M-L										
Horse Mountain													
Jornada del Muerto													
Mesita Blanca	H-L		M-L										
Presilla			M-L	M-L		M-L							
Sierra de las Canas				M		M	L	L					
Sierra Ladrones				M-L		L	L	M					
Stallion				L		L	L	L					
Veranito			M-L								L		
Aden Lava Flow					H-L								L
Alamo Hueco Mtns.													
Big Hatchet Mtns.						L	M-L	L					
Blue Creek													
Cedar Mtns.													
Cooke's Range					L								
Cowboy Spring						L							
Florida Mtns.				L		M-L			L				
Gila Lower Box													L
Las Uvas Mtns.													L
Organ Mountains													
Robledo Mountains						H-L							
West Potrillo Mtns.			L		H-L			H-L	M-L				
and Mt. Riley	H-L												
Brokeoff Mountains			L		L							L	
Culp Canyon			L										
ROSSELL DISTRICT													
Little Black Peak &													
Carrizozo Lava Flow	L		L	L		L	L						
Mudgetts		L											

SOURCE: BLM WARS, 1988.

NOTES: L - Low
M - Moderate
H - High

LIVESTOCK GRAZING USE LEVELS

A major public use of most WSAs is by ranchers involved in livestock production. The exact number of animal unit months (AUMs) of forage is not available because allotment boundaries do not coincide with WSA boundaries; however, an estimate of AUMs is provided, by using the average of 9 acres per AUM. This figure is an average, giving full consideration to the fact that carrying capacities do vary between WSAs. Other factors considered include percent slope, precipitation, and forage production. Furthermore, this figure is given so as to be able to estimate the impacts of wilderness designation to livestock grazing in Chapter 4. Table 3-8 shows acres of grazing and AUMs.

TABLE 3-8
GRAZING ACREAGES AND AUMs IN NEW MEXICO

	Acres	AUMs
New Mexico <u>a/</u>	64.0 million <u>b/</u>	7.1 million
BLM	13.0 million	1.5 million <u>c/</u>
WSAs	0.95 million	0.11 million

NOTES/SOURCES: a/ Includes private, State, Federal, and Indian grazing lands (not irrigated).
b/ SOURCE: New Mexico Soil and Water Conservation Plan, March 1982.
c/ SOURCE: Public Land Statistics, 1983.

The allotment numbers, forage allocations, and the periods of livestock use for each of the WSAs are shown in the individual WARs. The classes of livestock using WSAs are primarily cattle with some sheep and a few horses.

Most WSAs contain rangeland developments such as fences, pipelines, and water holding facilities. Existing and proposed rangeland developments for each WSA are shown on Table 3-9.

Road development within the WSAs is essentially nonexistent due to the nature of the areas along with the criteria for establishing WSA boundaries. However, a total of 461 miles of primitive, unmaintained vehicle ways exist in the WSAs. Most are used by hunters, off-road enthusiasts, miners, and woodhaulers. Approximately 154 miles of these ways are used by livestock operators to check livestock, to distribute salt and feed supplement, and to inspect or maintain rangeland developments. Operators haul water for livestock use only in the San Antonio (seasonal use) and Robledo Mountains (year round use) WSAs.

Rangeland developments have been proposed for grazing allotments and portions of these allotments overlap portions of the WSAs. Factors to determine implementation of rangeland development proposals vary as do their priorities. Therefore, the mere fact that developments are proposed does not imply they would be constructed.

EXISTING AND PROPOSED RANGE DEVELOPMENTS FOR WSAs RECOMMENDED SUITABLE

TABLE 3-9

WSA		All Wilderness										Emphasis On Manageability										Proposed Action										Conflict Resolution									
WSA	Season of Use*	Ways (mi)	Earthen Reservoirs	Fence (mi)	Pipeline	Troughs	Storage Tanks	Windmill	Corrals	Springs	Wells	Ways (mi)	Earthen Reservoirs	Fence (mi)	Pipeline	Troughs	Storage Tanks	Windmill	Corrals	Springs	Wells	Ways (mi)	Earthen Reservoirs	Fence (mi)	Pipeline	Troughs	Storage Tanks	Windmill	Corrals	Springs	Wells										
Rio Chama	S	22	4									6	4									6	4																		
Sabinoso	B	7	17																																						
San Antonio	S	8	1			1**																																			
Cabezon	B	2.75	6	11.5								2.75	6	11.5								2.75	6	11.5																	
Empedrado	Y	11	7	14.5		1				1		11	7	14.5		1				1		11	7	14.5		1															
Ignacio Chavez	B	14.3	30	14.8	3.4	4				(2)	1	14.3	30	14.8	3.4	4				(2)	1	14.3	30	14.8	3.4	4				(2)	1	11.5	26	12.8	3.4	4		(2)	1		
Chamisa	B	11		10.5		3					3	14	11	18.6		3					3	1	14	11	18.6		3			3	1	11		10.5		3		3	1		
La Lena	B	8	10	7.75	3.7	3						8	10	7.75	3.7	3							8	10	7.75	3.7	3														
Manzano	B	.3		.5	.6	1						.3		.5	.6	1							.3		.5	.6	1														
Ojito	E	6	8	14.5		5	1	1			1	6	8	14.5		5	1	1				6	8	14.5		5	1	1											1		
Petaca Pinta	B		7	2									7	2										7	2																
Rimrock	B	13	12		2.5	3		1			2	13	12		2.5	3		1			2		13	12		2.5	3		1			2									
Sand Canyon	B	5	7	4.5								5	7	4.5									5	7	4.5																
Little Rimrock	B	1	9	4								1	9	4									1	9	4																
Pinyon	B	10	11	10								10	11	10									10	11	10																
Ah-shi-sle-pah	Y	4	4	8																		2			2	4.8	4														
Antelope	Y	2		2	4.8	4						2		2	4.8	4																									
Continental Divide	Y	45	28	50	.5							33	17	25	.5							33	17	25	.5																
Devil's Backbone	Y	5	1	7	2.8	2																																			
Eagle Peak	Y	45	8	3.8	3	4	2	1				8		15	3	2	2						8		15	3	2	2													
				(1.3)	(1)	(2)				(1)		6	3	(1.3)	(1)	(2)		1			(1)		6	3	(1.3)	(1)	(2)									(1)					
				(1.3)	(1)	(2)				(1)				(1.3)	(1)	(2)					(1)				(1.3)	(1)	(2)														
Horse Mt	Y	7	3	4.8	.5			1														6	3	4.8	.5																
Jornada del Muerto	Y			29.5																																					
Mesita Blanca	Y	20	5	16	6	4						20	5	16	6	4																									
Presilla	Y	10		7.3																																					
Sierra de las Canas	Y			18.8										18.8											18.8																
Sierra Ladrones	Y	35	14	50.5	12.5	11					3	15	9	37	12.5	11					3		15	9	37	12.5	11														
Stallion	Y	20	5	22	2.2	4		1				20	5	22	2.2	4		1																							
Veranito	Y	5	1	16.8	3.1							5	1	16.8	3.1																										
						(4)										(4)						6	1	15		(4)															
Aden Lava Flow	Y	6	1	1	(4)	1						6	1	15	(4)	1						6	1	15	(4)	1															
Alamo Hueco Mts	Y	6	5	3																																					
Big Hatchet Mts	Y	8	9	22.5		4	4					7	5	9		1	1					7	5	9		1	1														
			(2)																																						
Blue Creek	Y	6	2	16	2	6	2	1	2																																
Cedar Mts	Y	10	2	.8	(.5)							10	2	.8	(.5)																										
Cooke's Range	Y	8		3.8		2					3																														
Cowboy Spring	Y	1										1																													
Florida Mts	Y	7	4	17	(.2)	2	2				8	7		5.5	(.2)	4					8																				
						(1)										(1)																									
Gila Lower Box	Y	1.5	(1)	7.5	(1)	1						1.5	(1)	7.5	(1)	1						1	(1)	7.5	(1)	1															
Las Uvas	Y	4.5	7	13.5																																					
Organ Mts	Y	1	1	8							5	1	13.5	8							5		1	13.5	8																
Robledo Mts	Y	2	1	1.8		1**						2	1	1.8		1**																									
West																																									
Potrillo/ Mt Riley	Y	72	10	78.5								66	10	78.5						2		66	10	78.5																	
Brokeoff Mts	Y	7	1				5					7	(5)				(1)																								
Culp Canyon	Y	4	2	4.5			3																																		
Carrizozo																																									
Lava Flow/ Little	Y	4																																							
Black Peak	Y																																								
Mudgetts	Y	3		4								2.25		2.5																											
TOTAL (PROPOSED)			(3)	(1.3)	(6.7)	(7)					(3)		(6)	(1.3)	(8.7)	(7)	(1)				(3)			(1)	(1.3)	(6)	(7)				(3)				(3)						
TOTAL (EXISTING)		278	243	345	37	67	19	6	5	25	3	239	153	224	34	51	4	4	3	22	3	195	151	197	29	38	2	3	3	14	3	125	49	134	16	10	2	1	2	3	3

NOTE: Numbers in parentheses show developments that are proposed.
These proposals are for allotments which include portions of the WSAs.

** Water hauled to these troughs

* Season of Use: Y - Yearlong; S - Seasonal; B - Both Seasonal and Yearlong



CHAPTER 4

Environmental Consequences

CHAPTER 4

ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This chapter provides an evaluation of Statewide environmental issues. These issues were developed as a result of the scoping process (see Chapter 5). The Statewide issues analyzed in this section are: Impacts on Wilderness Values, Impacts on Exploration and Development of Mineral Resources, and Impacts on Livestock Grazing Use Levels.

ASSUMPTIONS AND ANALYSIS GUIDELINES FOR STATEWIDE IMPACT ANALYSIS

Impact analysis was based upon the following assumptions and analysis guidelines:

- All figures used are approximate, and based on the best information currently available.
- In WSAs released from wilderness review by Congress, BLM will use existing planning documents, consistent with applicable laws and regulations, as the basis for managing the area.
- Wilderness boundaries will be located 30 feet from the centerline of jeep roads, 100 feet from the centerline of high standard dirt or gravel roads, and 300 feet from the centerline of paved highways.
- BLM will have adequate funds and personnel to manage areas designated wilderness.
- The adverse, short-term/long-term impacts, and irreversible/irretrievable commitments of each resource are considered and discussed where appropriate.
- The short-term is defined as the 10-year period following a Congressional decision on a WSA; long-term as the time period after those 10 years.
- Current trends in population and demand for resources will continue at the same rate of increase (or decrease) in the future, unless specifically stated otherwise.
- For analysis purposes, where mineral potential is classified as high, both exploration and development are anticipated. Where moderate, exploration is anticipated but development is less likely. Where low, exploration is anticipated only where an interest has been indicated.
- A wilderness management plan will be prepared for each designated wilderness area.
- Each designated wilderness area would be managed in accordance with the BLM Wilderness Management Policy. A copy of this policy can be obtained through any BLM office.

- Acreages and percentages of mineral resource lands identified as impacted under each alternative only represent Federal minerals. It is assumed that non-Federal minerals would not be significantly impacted by the proposed wilderness designations, since non-Federal mineral estate owners have the right to access and develop their resources under Federal law. If non-Federal mineral estates are considered for acquisition at some point in the future, the impact to the non-Federal resources would be addressed at that time.

ANALYSIS OF STATEWIDE ENVIRONMENTAL CONSEQUENCES

The remainder of this chapter addresses the Statewide environmental consequences of the Proposed Action and alternatives.

PROPOSED ACTION

If the Proposed Action were implemented, 27 WSAs totalling 545,072 acres of public land would be recommended as suitable for wilderness designation, with 20 WSAs (408,178 acres) recommended as nonsuitable. There are 3,331 acres of public land adjacent to the WSAs which are included in the preliminarily suitable acreage. The affected WSAs and the acres of adjacent public land involved in this recommendation are: Ignacio Chavez WSA, 345 acres; Chamisa WSA, 2,890 acres; Sand Canyon WSA, 23 acres; Little Rimrock WSA, 25 acres; and Pinyon WSA, 48 acres. Wilderness values which would be preserved by this alternative, as well as those which would be lost due to resource use and development are described below.

IMPACTS ON WILDERNESS VALUES

Impacts On Naturalness

The natural landscape of each WSA recommended suitable for wilderness designation would be maintained. The represented landscapes include lava flows, forested mountains, rivers, and the more typical desert mountains and lowlands of the Southwest.

Improvement in the naturalness of the areas would also occur as a result of eliminating or curtailing vehicle use on 195 miles of vehicle ways. Rehabilitation of these vehicle ways would occur slowly through weathering and natural revegetation.

Resource use and development of 408,178 acres recommended nonsuitable for wilderness designation would result in modifications to the existing natural landscape of the areas. Mineral exploration and development, including road construction in areas with a moderate and high potential for the occurrence of such commodities, would result in the removal of vegetation, soil, and rocks, thereby affecting naturalness. Off-road vehicle (ORV) use on and near these new mining roads, as well as the continued use of 83 miles of vehicle ways would further reduce the naturalness of these areas.

Impacts On Outstanding Opportunities For Solitude And Primitive Recreation

Under the Proposed Action, outstanding opportunities for solitude and primitive recreation would be maintained within 26 WSAs, totalling 544,191 acres of public land, recommended suitable for wilderness designation. The preliminarily suitable 381-acre Manzano WSA possesses outstanding opportunities for solitude when considered with the adjacent and larger U.S. Forest Service (USFS) Manzano Wilderness. The outstanding solitude opportunities would be improved through closure of the areas to ORV use, including the closing of 195 miles of existing unimproved vehicle ways.

Approximately 95 percent of the areas recommended suitable for wilderness designation (518,904 acres in 25 WSAs) provide outstanding opportunities for primitive and unconfined recreation. Examples of the outstanding opportunities which would be maintained include:

- Floatboating and fishing in the Rio Chama and Gila Lower Box WSAs.
- Rock-climbing in the Cabezon and Organ Mountains WSAs.
- Backpacking in the high mountains of the Sierra Ladrones and Continental Divide WSAs or in the expansive stretch of Chihuahuan Desert in the West Potrillo Mountains/Mount Riley WSAs.
- Backpacking in the Rimrock, Little Rimrock, Sand Canyon, and Pinyon WSAs.
- Hiking on the proposed Continental Divide National Scenic Trail in the Continental Divide WSA or on the Baylor Pass National Recreation Trail in the Organ Mountains WSA.
- Hiking and photography on the stark lava flows of the Jornada del Muerto and the Carrizozo Lava Flow/Little Black Peak WSAs.
- Hunting in the Ignacio Chavez, Sierra de las Canas, Horse Mountain, and Sierra Ladrones WSAs.
- Birdwatching for such species as the Gila woodpecker, bald eagle, zone-tailed hawk, and black hawk in the Gila Lower Box WSA.

Under the Proposed Action, solitude and primitive recreation opportunities would be diminished on the 408,178 acres recommended nonsuitable for wilderness designation. This would result from road building in support of ranching and energy and mineral exploration and development, as well as through ORV use. Examples of the primitive recreation opportunities which would be impaired over the long-term include:

- Hunting in the Cooke's Range and Florida Mountains WSAs.
- Hiking in the Eagle Peak and Presilla WSAs.
- Wildlife viewing in the Cooke's Range WSA.
- Natural landscape photography in the Eagle Peak, Florida Mountains, and Ah-shi-sle-pan WSAs.

Impacts On Special Features

Special features such as ecological, geologic, and other features of scientific, educational, scenic, or historical value contribute to an area's unique value for wilderness designation. Wilderness designation would provide the special features within the areas recommended suitable with a permanent form of protection not provided by other forms of land management. This protection would preserve and in some cases enhance these special features. Some of the features included in the suitable areas are:

- Bat Cave, an archaeological research site in the Continental Divide WSA.
- Cultural sites in the Rimrock, Little Rimrock, Sand Canyon, and Pinyon WSAs.

- Golden eagle, great horned owl, prairie falcon, and red-tailed hawk nesting sites in the Cabezon, Ignacio Chavez, Sierra Ladrones and Gila Lower Box WSAs.
- Chama River in the Rio Chama WSA and the Gila River in the Gila Lower Box WSA.
- Bighorn sheep in the Big Hatchet Mountains WSA and the potential reintroduction of bighorn sheep in the Sierra Ladrones WSA.
- Studies on melanistic species in the lava flows of the Aden Lava Flow, Jornada del Muerto, and Carrizozo Lava Flow/Little Black Peak WSAs.
- Mountain lions in the Continental Divide, Sierra Ladrones, and Big Hatchet Mountains WSAs.
- The relatively undisturbed and expansive stretch of Chihuahuan Desert in the West Potrillo Mountains/Mount Riley WSAs.
- The 163-acre enclave of western ponderosa forest within the Organ Mountains WSA.
- The largest natural arch in New Mexico located within the Rimrock WSA.

Special features in the areas recommended nonsuitable for wilderness designation could be impacted by eventual resource use and development. These special features include raptor nesting sites in the Cooke's Range and Florida Mountains.

Impacts On National Wilderness Preservation System (NWPS) Diversity

The NWPS would be expanded and diversified through implementation of the Proposed Action. Ecosystems not currently represented would be added to the system and approximately 60 percent of the existing solitude and recreation opportunities within a day's driving time (5 hours) of the Standard Metropolitan Statistical Areas (SMSAs) would be maintained.

The ecosystems and acres to be included in the NWPS are shown on Table 4-1. If the Proposed Action were implemented, the ecosystems within the Chihuahuan Desert Province, Colorado Plateau Province and Mexican Highlands Shrub Steppe Province would be the first of their type to be included in the system. However, 12,391 acres of Oak Juniper Woodland Scrub Ecosystem in the Mexican Highlands Shrub Steppe Province would not be added to the NWPS. This ecosystem is in the Alamo Hueco Mountains WSA and is unique in that it is not nationally represented in any other area currently designated as wilderness or under wilderness review by BLM or any other agency.

TABLE 4-1
ECOSYSTEM ACRES RECOMMENDED SUITABLE FOR WILDERNESS
DESIGNATION BY ALTERNATIVE

Ecosystems by Province	Ecosystem Acres By Alternative			
	All Wilderness	Emphasis on Manageability	Proposed Action	Conflict Resolution
CHIHUAHUA DESERT PROVINCE				
Mountain Mahogany Oak Scrub	30,643	9,468	3,362	0
Grama Tobosa Shrub Steppe	188,976	128,072	64,671	33,524
Trans-Pecos Shrub Savanna	78,550	73,439	64,424	64,424
Creosote Bush	81,146	67,307	57,020	57,020
Mesquite Acacia Savanna	43,077	34,432	36,762	33,143
Western Ponderosa Forest	163	163	163	0
ROCKY MOUNTAIN FOREST PROVINCE				
Ponderosa Pine and Douglas Fir Forest	1,285	850	850	850
Pinyon-Juniper Woodland	1,352	982	982	982
Great Basin Sagebrush	16,398	3,400	3,400	3,400
COLORADO PLATEAU PROVINCE				
Ponderosa Pine and Douglas Fir Forest	43,467	46,744	46,744	4,116
Pinyon-Juniper Woodland	127,488	104,080	67,370	25,428
Great Basin Sagebrush	880	880	880	0
Grama Galleta Steppe	104,634	59,664	48,506	12,334
Juniper Mixed Shrub	25,312	24,344	24,344	24,344
MEXICAN HIGHLANDS SHRUB STEPPE PROVINCE				
Oak Juniper Woodland Scrub	12,391	0	0	0
Mountain Mahogany Oak Scrub	35,041	35,041	35,041	35,041
Creosote Bush	35,711	15,864	15,864	15,864
Grama Tobosa Shrub Steppe	3,168	1,168	1,168	1,168
Trans Pecos Shrub Savanna	2,524	0	0	0
UPPER GILA MOUNTAINS FOREST PROVINCE				
Ponderosa Pine and Douglas Fir Forest	7,407	7,407	7,407	2,462
Pinyon-Juniper Woodland	53,002	42,886	42,886	1,970
Grama Galleta Steppe	57,304	21,542	21,542	0

SOURCE: BLM WARS, 1988.

NOTE: Except for the Ponderosa Pine and Douglas Fir Forest in the Rocky Mountain Forest Province, Colorado Plateau Province, and Upper Gila Mountains Forest Province, none of the ecosystems within the New Mexico WSAs are currently represented in the NWPS.

The number of new wilderness areas and the total acreage added to the NWPS within 5 hours drive of each SMSA is shown on Table 4-2. This would increase the opportunities for recreation and solitude during the spring, fall, and winter months, primarily as a result of the milder winters of these desert regions.

TABLE 4-2
COMPARISON OF ADDITIONAL WILDERNESS OPPORTUNITIES
WITHIN FIVE HOURS DRIVE OF THE
STANDARD METROPOLITAN STATISTICAL AREAS (SMSAs)

ALTERNATIVES	RECOMMENDED SUITABLE FOR WILDERNESS DESIGNATION BY ALTERNATIVE FOR EACH SMSA											
	Albuquerque, NM		Las Cruces, NM		Santa Fe, NM		Tucson, AZ		El Paso, TX		Lubbock, TX	
	Number of Areas	Acres	Number of Areas	Acres	Number of Areas	Acres	Number of Areas	Acres	Number of Areas	Acres	Number of Areas	Acres
All Wilderness	38	765,839	30	673,548	27	451,821	9	178,258	27	612,736	3	28,253
Emphasis on Manageability	30	566,255	23	495,122	22	329,874	6	108,101	20	446,011	3	26,574
Proposed Action	24	485,383	15	388,127	18	282,736	3	57,908	12	339,016	2	24,344
Conflict Resolution	10	257,968	9	268,782	4	55,460	3	57,908	9	268,782	2	24,344

SOURCE: BLM WARS, 1988.

Conclusion - Impacts on Wilderness Values. Under the Proposed Action, the natural landscape in 27 WSAs (545,072 acres) would be maintained. Improvement in the quality of naturalness on less than 1 percent of the area would result. Solitude and primitive recreation opportunities would be maintained on 57 percent of the acreage under wilderness review. Recreation opportunities include floatboating, backpacking, big game hunting, rock-climbing, and nature photography. Archaeological sites, raptor habitat, bighorn sheep habitat, opportunities to study melanistic species, and unique vegetative communities would be preserved. There would be 17 new ecosystems added to the NWPS.

Wilderness values, including naturalness, solitude, and recreation opportunities, would be diminished on 408,178 acres recommended nonsuitable for wilderness designation.

IMPACTS ON EXPLORATION AND DEVELOPMENT OF MINERAL RESOURCES

Impacts On Mining Claims And Mineral Leases

The impacts of wilderness designation on mineral exploration and development were analyzed for the Proposed Action and each of the alternatives. Impacts associated with restrictions on existing mineral leases and mining claims, as well as withdrawals of potentially economic mineral

resources are addressed. Although the acreages of high and moderate potential mineral resource areas identified in the Wilderness Analysis Reports (WARs) provide a good comparison between alternatives, additional Statewide or regional information is needed to put the impacts into perspective. In order to provide some overall context to the potential effects of the Proposed Action and each of the alternatives, the Wilderness Study Areas (WSAs) were also evaluated in respect to the Statewide mineral resource maps presented in Chapter 3 (see Maps 3-3 through 3-7). This comparison illustrates the potential effect on New Mexico's mineral resources as a whole. The U.S. demand and production relationships in Appendix A provide additional perspective on impacts to New Mexico's mineral resources.

Under the Proposed Action, 284 mining claims would be subjected to wilderness management. The bulk of these claims lie within the West Potrillo Mountains/Mount Riley, Organ Mountains, and Sierra Ladrones WSAs (see Table 4-3). In order to initiate or continue operations on claims subject to wilderness management, mining claimants must have previously completed all discovery work prior to wilderness designation. It is anticipated that mining operations within wilderness areas would be faced with higher operating and development costs in order to minimize damage to wilderness values. Without wilderness designation, only a small percentage of these claims would likely result in any significant mineral production. It is anticipated that very few to none of these claims would be developed if the Proposed Action is implemented. Appendix A contains a discussion of how wilderness designation would affect mining claims.

Oil and gas leases are not expected to be affected because at the time of wilderness designation only leases with no surface occupancy stipulations would be encumbered. No surface occupancy leases are of little value unless they are in close proximity to a WSA boundary where directional drilling may be economically feasible. No other types of mineral leases would be affected by the Proposed Action.

Impacts On Mineral Resource Development

The impacts on mineral resource development depend directly on how much the mineral potential of the respective WSA actually translates into actual development. As noted in Chapter 3, BLM geologists, with the aid of the most current literature, classified lands within each WSA in respect to their mineral resources potential. The total acreages of high and moderate mineral resources identified for withdrawal under the Proposed Action are summarized by commodity. However, high potential for mineral resource occurrence does not equate with high development. Resources must be found and must be commercially capable of development to be considered impacted in their development. Acreages of impacted mineral resource lands only include the Federal mineral estate, since it is assumed that no significant impacts would occur to non-Federal mineral estates due to existing laws which preserve access and development rights. Table 4-4 exhibits the relative acreages of potential mineral resources to be withdrawn under the Proposed Action and the alternatives. Acreages of potential mineral resources to be withdrawn by alternative, WSA, and commodity are included in Appendix A.

TABLE 4-3
NUMBER OF MINING CLAIMS IMPACTED BY EACH ALTERNATIVE

WSA	Emphasis		Proposed Action	Conflict Resolution
	All Wilderness	on Manageability		
Rio Chama	0/0	0/0	0/0	0/0
Sabinoso	0/3	*	*	*
San Antonio	0/0	*	*	*
Cabazon	0/0	0/0	0/0	*
Empedrado	0/0	0/0	0/0	*
Ignacio Chavez	0/0	0/0	0/0	0/0
Chamisa	0/0	0/0	0/0	0/0
La Lena	0/0	0/0	0/0	*
Manzano	0/0	0/0	0/0	*
Ojito	0/0	0/0	0/0	*
Petaca Pinta	0/0	0/0	0/0	*
Rimrock	0/0	0/0	0/0	*
Sand Canyon	0/0	0/0	0/0	*
Little Rimrock	0/0	0/0	0/0	*
Pinyon	0/0	0/0	0/0	*
Ah-shi-sle-pah	0/0	*	*	*
Antelope	0/0	0/0	*	*
Continental Divide	0/0	0/0	0/0	*
Devil's Backbone	0/0	*	*	*
Eagle Peak	0/0	0/0	*	*
Horse Mountain	0/0	0/0	0/0	0/0
Jornada del Muerto	0/0	0/0	0/0	*
Mesita Blanca	0/0	0/0	*	*
Presilla	0/2	*	*	*
Sierra de las Canas	0/7	0/7	0/7	0/7
Sierra Ladrones	0/71	0/71	0/71	*
Stallion	0/0	0/0	*	*
Veranito	0/0	0/0	*	*
Aden Lava Flow	0/0	0/0	0/0	0/0
Alamo Hueco Mountains	0/10	*	*	*
Big Hatchet Mountains	3/0	3/0	3/0	3/0
Blue Creek	0/0	*	*	*
Cedar Mountains	0/29	0/29	*	*
Cooke's Range	10/82	*	*	*
Cowboy Spring	13/5	13/5	13/5	13/5
Florida Mountains	62/201	62/201	*	*
Gila Lower Box	0/3	0/3	0/3	0/3
Las Uvas Mountains	0/0	*	*	*
Organ Mountains	47/38	47/38	47/38	*
Robledo Mountains	0/0	0/0	*	*
West Portrillo Mountains and Mount Riley	22/81	16/81	16/81	16/81
Brokeoff Mountains	0/0	0/0	*	*
Culp Canyon	0/0	*	*	*
Carrizozo Lava Flow and Little Black Peak	0/0	0/0	0/0	0/0
Mudgetts	0/0	0/0	*	*
TOTAL	157/532	141/435	79/205	32/96

SOURCE: BLM WARs, 1988.

NOTES: X/ Pre-FLPMA Mining Claims
 /X Post-FLPMA Mining Claims
 * WSA nonsuitable under this alternative

TABLE 4-4
ACRES OF HIGH AND MODERATE MINERAL POTENTIAL
AFFECTED BY WILDERNESS DESIGNATION BY ALTERNATIVE

	All Wilderness	Emphasis on Manageability	Proposed Action	Conflict Resolution	No Wilderness
Total Acres of Proposed Wilderness	943,356	681,757	560,328	329,072	0
<u>Energy Resources</u>					
Coal	66,400	33,100	15,800	8,600	0
Geothermal	31,400	22,700	13,700	12,800	0
Oil and Gas	261,600	198,100	196,000	49,900	0
Uranium	38,700	25,200	20,900	0	0
<u>Metallic Resources</u>					
Cobalt	8,100	8,100	8,100	0	0
Copper	63,000	56,900	31,200	17,400	0
Gold	15,300	9,900	8,400	4,600	0
Lead	33,000	23,300	21,800	17,400	0
Manganese	1,300	1,300	0	0	0
Molybdenum	15,100	9,700	8,200	4,400	0
Nickel	8,100	8,100	8,100	0	0
Silver	53,600	47,500	21,800	17,400	0
Tin	24,000	16,600	16,600	0	0
Tungsten	8,800	8,200	8,200	4,400	0
Zinc	33,000	23,300	21,800	17,400	0
<u>Non-Metallic Resources</u>					
Barite	17,700	13,400	13,400	600	0
Building Stone	4,800	4,800	3,500	3,500	0
Cinders/Scoria	12,600	11,100	8,800	8,800	0
Fluorspar	17,600	13,300	12,900	12,800	0
Gypsum	200	200	200	200	0
High Calcium Limestone	14,500	9,400	5,700	0	0
High Magnesium Dolomite	200	200	0	0	0
Humates	15,800	15,800	15,800	6,500	0
Sand and Gravel	4,950	1,250	0	0	0

SOURCE: BLM WARs, 1988.

In order to assess the significance of the overall impacts of the Proposed Action, as well as the other alternatives, Tables 4-5 through 4-9 were developed. The statistics on these tables are based on the generalized information illustrated on Maps 3-3 through 3-7. Tables 4-5 through 4-9 also note the percentage of mineral resource lands presently encumbered by major Federal withdrawals. Percentages of impacted mineral resource lands only include the Federal mineral estate. Also, it cannot be assumed that potential for development is as high as potential for occurrence.

Impacts On Energy Resources

Implementation of the Proposed Action would withdraw relatively insignificant coal, and oil and gas resources (see Tables 4-5 through 4-7). The Proposed Action would withdraw approximately 0.3 of 1 percent of New Mexico's known petroleum provinces and approximately 1 percent of other areas with high to moderate potential for oil and gas resources. Although no existing geothermal or coal leases would be encumbered, about 0.5 percent of the most favorable geothermal and coal resource areas would be withdrawn. The Proposed Action would have no significant impact on oil, gas, geothermal, or coal resource development.

The only potentially significant impact on uranium resource development under the Proposed Action is site-specific and associated with the Sierra Ladrones WSA. The northeastern portion of the Sierra Ladrones WSA lies less than $\frac{1}{2}$ mile west of the Jeter Uranium Mine. This mine has had the largest production of any New Mexico uranium mine outside of the Grants Uranium District. Economic extensions or sources of the uranium mineralization may lie within the Sierra Ladrones WSA.

The New Mexico Bureau of Mines hypothesizes that a Precambrian, stratabound, nickel-cobalt bearing, copper-uranium deposit within the Sierra Ladrones may have provided the source of the Jeter Mine's mineralization. Until additional evidence is available, any alternative which recommends the Sierra Ladrones WSA for wilderness designation must be considered to have potentially significant impacts on the development of uranium resources.

Impacts On Metallic Resources

The Proposed Action would withdraw 1.5 to 2.0 percent of New Mexico's bismuth, manganese, lead, tellurium, and zinc mineral resource areas and approximately 1 percent of New Mexico's copper, molybdenum, and tungsten mineral resource areas (see Table 4-9). Due to the very limited distribution of tin, cobalt, and nickel, these commodities were not amenable to being addressed on Table 4-9. Since the U.S. has serious supply problems in respect to tin, cobalt, and nickel, they are specifically addressed below.

Potential tin occurrences in New Mexico are confined to Tertiary vein deposits in rhyolites of the Taylor Creek Area and lesser significant concentrations in Precambrian pegmatites of the Southern Rocky Mountain Province. The Taylor Creek Tin District is one of very few potentially economic tin resource areas in the U.S. The Continental Divide WSA contains rhyolitic rock units equivalent to the tin host rocks of the Taylor Creek Area immediately south of the WSA. Little is known about the distribution of tin mineralization in the area.

TABLE 4-5
IMPACTS ON COAL RESOURCES a/

	Potentially Surface Mineable Coal with Less Than 250' of Overburden	Coal Resources Less Than 3000' Deep	Coal Resources Greater Than 3000' Deep
Lands with coal resource potential in New Mexico (sq. mi.)	890	12,780	1,630
Percent of all lands in New Mexico	0.7%	10.5%	1.3%
Percent of coal resource lands presently under Federal withdrawal in New Mexico	1.1%	0.7%	0
Percent of New Mexico's coal resource lands proposed for withdrawal under the:			
All Wilderness Alternative	1.2%	1.2%	0
Emphasis on Manageability Alternative	0.5%	0.8%	0
Proposed Action	0.5%	0.7%	0
Conflict Resolution Alternative	0.0%	0.3%	0

SOURCE: Mineral potential based on the Energy Resources Map of New Mexico, prepared by NM Bureau of Mines and Mineral Resources and the U.S. Geological Survey (1981).

NOTE: a/ Considers only major Federal withdrawals such as wilderness areas, wildlife refuges, military reservations, and national parks.

TABLE 4-6
IMPACTS ON GEOTHERMAL RESOURCES

	Class 1 <u>a/</u>	Class 2 <u>b/</u>
Lands with geothermal resource potential in New Mexico (sq. mi.)	5,228	17,073
Percent of all lands in New Mexico	4.3%	14.1%
Percent of geothermal resource <u>c/</u> lands presently under Federal withdrawal in New Mexico	1.5%	25.4%
Percent of New Mexico's geothermal resources proposed for withdrawal under the:		
All Wilderness Alternative	1.1%	2.5%
Emphasis on Manageability Alternative	0.9%	2.1%
Proposed Action	0.5%	1.9%
Conflict Resolution Alternative	0.5%	1.6%

SOURCE: Mineral potential based on information by J.F. Callendar, W.R. Seager, and C.A. Swanbery (1983).

NOTES: a/ Class 1: Areas presently identified as most favorable for the discovery and development of low temperature geothermal resources.
b/ Class 2: Additional areas which may also be suitable for developing geothermal resources.
c/ Considers only major Federal withdrawals such as wilderness areas, wildlife refuges, military reservations, and national parks.

TABLE 4-7
IMPACTS ON OIL AND GAS RESOURCES

	Petroleum Provinces with Known Potential	Areas Outside of Known Petroleum Provinces with High Potential	Areas with Moderate Potential
Lands with oil and gas resource potential in New Mexico (sq. mi.)	21,251	10,470	25,870
Percent of all lands in New Mexico	17.5%	8.6%	21.3%
Percent of oil and gas resource ^{a/} lands presently under Federal withdrawal in New Mexico	0.7%	1.9%	10.4%
Percent of New Mexico's oil and gas resources proposed for withdrawal under the:			
All Wilderness Alternative	0.3%	1.5%	1.1%
Emphasis on Manageability Alternative	0.3%	1.1%	1.0%
Proposed Action	0.3%	0.8%	0.9%
Conflict Resolution Alternative	0.2%	0.9%	0.3%

SOURCE: Mineral potential based on information derived from Foster (1974).

NOTE: ^{a/} Considers only major withdrawals such as wilderness areas,
wildlife refuges, military reservations, and national parks.

TABLE 4-8
IMPACTS ON URANIUM RESOURCES ^{a/}

	Areas of Significant Past and Present Production	Areas of Multiple Occurrences
Lands with uranium potential in New Mexico (sq. mi.)	1,950	11,300
Percent of all lands in New Mexico	1.6%	6.4%
Percent of uranium lands in New Mexico presently under Federal withdrawal	0	6.4%
Percent of New Mexico's uranium resources proposed for withdrawal under the:		
All Wilderness Alternative	1.5%	1.4%
Emphasis on Manageability Alternative	1.5%	1.0%
Proposed Action	1.5%	0.7%
Conflict Resolution Alternative	0	0.2%

SOURCE: Mineral potential based on information modified from McLemore (1983).

NOTE: ^{a/} Includes only major Federal withdrawals such as wilderness areas,
wildlife refuges, military reservations, and national parks.

TABLE 4-9
IMPACTS ON METALLIC MINERAL RESOURCES (INCLUDING FLUORITE AND BARITE) ^{a/}

	Ag	Au	Bi	Cu	Fe	Mn	Mo	Pb	Te	V	W	Zn	Fluorite	Barite	TOTAL ^{b/}
Lands with metallic mineral resource potential in New Mexico (square miles)	4067	3668	797	4590	1047	1011	1220	4023	697	324	1390	2705	2747	1811	6544
Percent of all lands in New Mexico	3.3	3.0	0.7	3.8	0.9	0.8	1.0	3.3	0.6	0.3	1.1	2.2	2.3	1.5	5.4
Federal metallic resource lands withdrawn from mining (square miles)															
- Military Reservations	162	117	107	490	10	0	107	485	107	18	144	328	461	555	686
- USFS Wilderness Areas	257	248	42	240	3	38	87	244	6	11	42	122	99	64	302
- U.S. Fish and Wildlife Areas	4	0	0	83	0	58	0	72	0	0	0	25	43	80	84
Total Withdrawn	423	365	149	813	13	96	194	801	113	29	186	475	603	699	1072
Percent of all metallic resource lands under Federal withdrawal	10.4	10.0	18.7	17.7	1.2	9.5	15.9	19.9	16.2	9.0	13.4	17.6	22.0	38.6	16.4
Percent of New Mexico's metallic mineral resource lands proposed for withdrawal under the:															
All Wilderness Alternative	2.6	2.9	1.5	3.6	1.0	10.6	1.0	4.6	1.7	3.7	1.7	4.2	4.5	6.8	3.0
Emphasis on Manageability Alternative	1.5	1.7	1.5	2.3	1.0	6.0	1.0	3.1	1.7	0	0.9	2.6	2.8	5.4	2.1
Proposed Action	0.5	0.6	1.5	1.3	0	2.0	1.0	1.9	1.7	0	0.9	1.5	1.5	3.3	1.1
Conflict Resolution Alternative	0.2	0.2	0	0.5	0	0	0	1.1	0	0	0	0.3	0.3	1.5	0.5

SOURCE: Mineral potential based on information from Hutchins (1983); New Mexico Metal Resource Map NMBMR (1958); and Mineral and Water Resources of New Mexico, USGS et al. (1965).

NOTES: The Federal Government has identified all the above commodities, with the exception of Au, Barite, Fe, and Te, as Critical and Strategic minerals under the authority of 50 USC 98.

^{a/} Considers only major Federal mineral resource withdrawals such as wilderness areas, wildlife refuges, military reservations, and national parks.

^{b/} Note that several commodities may occur within the same locality.

LIST OF CHEMICAL ABBREVIATIONS USED IN THIS DOCUMENT

Ag - Silver	Au - Gold
Bi - Bismuth	Cu - Copper
Fe - Iron	Mn - Manganese
Mo - Molybdenum	Pb - Lead
Te - Tellurium	V - Vanadium
W - Tungsten	Zn - Zinc

Although the Continental Divide WSA is only classified as having a moderate potential for tin, the withdrawal of the Continental Divide WSA could have significant impacts on the exploration and development of tin.

The Sierra Ladrones WSA contains 8,100 acres which are classified as having a moderate potential for nickel and cobalt bearing, stratabound copper-uranium deposits. Under the Proposed Action, withdrawal of the Sierra Ladrones WSA would mean that any opportunity to explore for the hypothesized nickel-cobalt bearing deposits would be foregone. The only known New Mexico occurrences of nickel-cobalt are in the Luis Lopez and Black Hawk Mining Districts. Withdrawal of the Sierra Ladrones area could potentially impact future cobalt-nickel supplies in the U.S.

In order to illustrate the potential economic impacts of withdrawing metallic resources, an estimate was made concerning the value of copper resources withdrawn under the alternatives considered (see Appendix A). The overall present worth of anticipated copper production in New Mexico is estimated to be \$1.5 billion. Assuming that all copper resource lands have an equal probability of going into production, it is estimated that \$20 million of copper resources would be withdrawn under the Proposed Action. Since a few large operations can fulfill the anticipated demand, and an accurate prediction of which copper resource lands would eventually go into production is not possible, the \$20 million dollars must be considered a very rough estimate.

Impacts On Nonmetallic Resources

Due to the relative abundance and remote locations of the majority of the industrial minerals found in the WSAs only the potential impacts to barite and fluorite resources are identified on Table 4-9.

Table 4-9 indicates that the Proposed Action would withdraw 1.5 percent and 3.3 percent of New Mexico's fluorite and barite resources, respectively. Table 4-9 also indicates that substantial acreages of New Mexico's barite and fluorite resources are already under withdrawal. The bulk of these withdrawn mineral resources lie within the boundaries of the White Sands Missile Range.

Although New Mexico's known fluorite deposits form a substantial portion of the U.S. reserve base, presently identified barite resources in New Mexico are not especially impressive. New Mexico's barite deposits tend to occur along the Rio Grande rift zone in small vein and replacement deposits, while more important deposits in Nevada and California occur as massive bedded sedimentary deposits. The Proposed Action may impact local opportunities to develop economic fluorite and barite resources, but no impacts of a Statewide or National scale are anticipated.

Conclusion - Impacts on Exploration and Development of Mineral Resources. The Proposed Action would significantly restrict the potential development of 284 mining claims. The amount of that possible development, however, is unknown. It is likely to be less than the amount of potential occurrence of resources. It is anticipated that active mineral leases at the time of designations would not be significantly affected due to prior no surface occupancy stipulations. With the exception of possible uranium deposits within the Sierra Ladrones WSA, it is believed that no significant energy resources would be withdrawn.

Between 1.5 and 2 percent of the New Mexico acreage which has a moderate or a high potential for hosting bismuth, manganese, lead, tellurium, and zinc deposits would be withdrawn from exploration and development. No significant nonmetallic minerals would be encumbered, with the probable exception of small fluorite and barite deposits.

IMPACTS ON LIVESTOCK GRAZING USE LEVELS

A discussion on livestock grazing is included in this analysis as a result of Statewide interest generated during the scoping process. Section 4(d)(4)(2) of the Wilderness Act provides for continued livestock grazing where established prior to designating the area as wilderness. The objective of livestock management in wilderness is: "Utilize the forage resource in conformity with established wilderness objectives for each area and the BLM grazing regulations (43 CFR 4100)" In keeping with the BLM Wilderness Management Policy, livestock use within the WSAs recommended suitable could remain at or near the level occurring at the time of designation. In order to maintain the level of use within the WSAs, the level of use in adjacent nonwilderness areas may also have to be maintained at or near the level occurring at the time of wilderness designation. Due consideration, as in the past, would be given to legal mandates, rangeland condition, and the need to prevent rangeland deterioration. Where rangeland conditions permit increases in grazing use, such increases would be limited to levels that do not diminish the wilderness values of a designated area.

Wilderness designation would result in vehicle use being eliminated or curtailed. As discussed in Chapter 3, the use of the existing vehicle ways is predominantly by ORV enthusiasts, hunters, and for mineral exploration. Table 3-9 shows the miles of vehicle ways that would be closed for each alternative. Ranchers and operators utilize about 33 percent of these ways on a limited basis. The incidence of rancher/operator use of ways is less in those instances where livestock grazing on allotments is seasonal rather than year long. Table 3-9 shows the seasons of use for the WSAs.

The most serious impact of wilderness designation on livestock grazing would be the inconvenience to livestock operators due to elimination or curtailment of vehicular use on those portions of their allotments within designated wilderness areas. Permits are allowed under the Wilderness Management Policy for use of motor vehicles for construction of new structural rangeland developments or for maintenance of existing facilities where there are no practical alternatives or where emergency situations arise.

The opportunities for construction of future rangeland developments within the WSAs would be affected; however, in most cases the developments could be constructed on those allotments immediately outside the WSA boundaries or these developments could be constructed within the wilderness area subject to the constraints in the BLM Wilderness Management Policy. These constraints relate to design, location, and maintenance. They include construction with the use of native/natural materials and preclusion of motorized access for maintenance of new developments. Since these developments are designed to redistribute livestock rather than to increase AUMs, no impacts caused by increases in livestock numbers would occur. Under wilderness management, vandalism to rangeland improvements would decrease significantly primarily because of closure of the area to recreational vehicle use. Similarly, theft and harassment of livestock would decrease. The problem of gates accidentally

left open should be eliminated. The occurrence of litter indiscriminately tossed from vehicles and the incidence of unauthorized dumping would also be expected to decrease.

A total of 949,919 acres in 47 WSAs were studied for inclusion in the NWPS. The estimated number of AUMs within the WSAs by alternative are provided in Table 4-10.

TABLE 4-10
NUMBER OF AUMs WITHIN THE WSAs RECOMMENDED SUITABLE

	All Wilderness	Emphasis on Manageability	Proposed Action	Conflict Resolution	No Wilderness
Acres	949,919	686,113	545,072	315,931	0
AUMs	105,800	76,500	60,800	35,200	0

There are approximately 64 million acres of private, State, Federal, and Indian lands producing approximately 7.1 million AUMs in New Mexico. Of this, about 13 million acres of public land produce about 1.5 million AUMs. Table 4-11 shows the WSA percentage of public grazing land and the percentage of all grazing land in New Mexico by alternative.

TABLE 4-11
PERCENTAGE OF NEW MEXICO GRAZING LAND WITHIN THE
WSAs RECOMMENDED SUITABLE

	All Wilderness	Emphasis on Manageability	Proposed Action	Conflict Resolution	No Wilderness
Percent BLM Grazing Land	7.30	5.28	4.19	2.43	0
Percent NM Grazing Land	1.50	1.07	0.85	0.49	0

Impacts On Livestock Grazing Use Levels

Under the Proposed Action, use of approximately 195 miles of vehicle ways would be eliminated or curtailed. Of this amount, it is estimated that approximately one-third or 64 miles are specifically used by livestock operators and ranchers to drive vehicles to rangeland developments, distribute salt or feed supplement, or to check livestock distribution and condition (see Table 3-9 for the miles of vehicle ways for each WSA under this alternative).

Although specific sites have not yet been identified, the following rangeland developments are proposed for allotments which include portions of WSAs recommended as suitable: 1.3 miles of fence, 1 dirt tank, 6 miles of pipeline, and 7 troughs.

Wilderness designation would have no impact on these proposals if they were constructed outside the wilderness boundaries. These developments could be constructed within designated wilderness; however, they would be subject to the constraints of the BLM Wilderness Management Policy. These constraints relate to design, location, and maintenance. They include construction with the use of native/natural materials and preclusion of motorized access for maintenance of new developments. Such constraints can be expected to increase construction and maintenance costs.

Because of the relatively low number of proposals and the fact that most of these projects could be constructed outside of the area designated as wilderness, no Statewide impacts on proposed rangeland developments are anticipated.

Use of the acreage in those areas recommended nonsuitable for wilderness designation (386,359 acres) would no longer be managed to protect wilderness values. Restrictions on access would be discontinued which would probably result in vandalism to and theft of rangeland developments, harassment and theft of livestock, gates left open, littering, indiscriminate dumping, and acceleration of erosion by vehicular use both off and on vehicle routes. Rangeland development proposals could be implemented on the allotments without wilderness restrictions.

Conclusion - Impacts on Livestock Grazing Use Levels. Under the Proposed Action, no impacts would result on existing livestock grazing use levels. Also, because such a low percentage (0.85) of the grazing land in New Mexico would be added to wilderness and most of the proposed rangeland developments could be constructed outside of the wilderness boundaries, no major Statewide impacts are projected.

ALL WILDERNESS ALTERNATIVE

If the All Wilderness Alternative were implemented, 47 WSAs totalling 949,919 acres of public land would be recommended as suitable for wilderness designation. The wilderness values which would be preserved by this action are described below.

IMPACTS ON WILDERNESS VALUES

Impacts On Naturalness

The natural landscape of each WSA would be maintained. Except for the Great Plains Province, these natural landscapes are representative of the diverse landforms which occur throughout New Mexico.

Improvement in the naturalness of the areas would occur as a result of eliminating or curtailing vehicle use on 278 miles of vehicle ways. Rehabilitation of these vehicle ways would occur slowly through weathering and natural revegetation.

Impacts On Outstanding Opportunities For Solitude And Primitive Recreation

Each of the WSAs currently provides outstanding opportunities for solitude. These opportunities result from the roadless character, varied landscape, and vegetative cover of each WSA. Since the entire area within each WSA is recommended suitable under this alternative, solitude opportunities are maximized. These outstanding solitude opportunities would be further improved through closing the areas to ORV use. A total of 278 miles of existing unimproved vehicle ways would be closed by this action.

A total of 819,128 acres in 36 WSAs provide outstanding opportunities for primitive and unconfined recreation. In addition to the opportunities previously identified under the Proposed Action, the following opportunities would be maintained under the All Wilderness Alternative:

- Backpacking in the Florida Mountains and Eagle Peak WSAs.
- Big game hunting in the San Antonio, Florida Mountains, and Alamo Hueco Mountains WSAs.
- Nature photography in Cooke's Range, Alamo Hueco Mountains, Ah-shi-sle-pah, and Florida Mountains WSAs.
- Hiking in the Sabinoso, Presilla, Ah-shi-sle-pah, and Blue Creek WSAs.
- Wildlife observation in the Alamo Hueco Mountains, Cooke's Range, Florida Mountains, and San Antonio WSAs.

Impacts On Special Features

Special features contribute to an area's unique value for wilderness designation. They include ecological, geologic, and other features of scientific, educational, scenic, or historical value.

In addition to those features previously identified under the Proposed Action, the following special features would be afforded the protection of wilderness designation under the All Wilderness Alternative:

- Tinajas Area of Critical Environmental Concern (ACEC), a pictograph site in the Presilla WSA.
- Massacre Peak Petroglyphs, Butterfield Trail, and historic town of Cooke's in the Cooke's Range WSA.
- Golden eagle, great horned owl, prairie falcon, and red-tailed hawk nesting sites in the Cooke's Range and Florida Mountain WSAs.
- The badlands topography and fossils found in the Ah-shi-sle-pah WSA.
- Mountain lions in the Alamo Hueco Mountains WSA.
- Wild and free roaming horses in the Stallion WSA.

Impacts On National Wilderness Preservation System Diversity

The maximum increase in the diversity of the NWPS would occur under the All Wilderness Alternative. As in the Proposed Action, new ecosystem representations would be added to the NWPS and additional solitude and recreation opportunities within a 5 hour drive of the SMSAs would be maintained.

The ecosystems and acres to be included in the NWPS are shown on Table 4-1. The All Wilderness Alternative would increase the acreage represented in each ecosystem and add 12,391 acres of the Oak Juniper Woodland Scrub Ecosystem in the Mexican Highlands Shrub Steppe Province. This ecosystem is in the Alamo Hueco Mountains WSA and is unique in that it is not nationally represented in any other area currently designated as wilderness or under wilderness review by BLM or any other agency.

The number of new wilderness areas within a 5 hour drive of each SMSA and the total acreage added to the system is shown on Table 4-2. The primary benefit would be in the expanded spring, fall, and winter recreational use seasons provided by these desert regions.

Conclusion - Impacts on Wilderness Values. Under the All Wilderness Alternative, the natural landscape in the 47 WSAs (949,919 acres) would be maintained. Improvement in the quality of naturalness on less than 1 percent of the area would result. Solitude and primitive recreation opportunities would be maintained. Recreation opportunities include floatboating, backpacking, big game hunting, rock-climbing, and nature photography. Under this alternative, archaeological sites, raptor habitat, bighorn sheep habitat, opportunities to study melanistic species, and unique vegetative communities would be preserved. There would be 19 new ecosystems added to the NWPS. This alternative would include the 12,391-acre Oak Juniper Woodland Scrub Ecosystem in the Alamo Hueco Mountains WSA and the 2,524 acres of the Trans Pecos Shrub Savanna Ecosystem in the Alamo Hueco Mountains and Big Hatchet Mountains WSAs.

IMPACTS ON EXPLORATION AND DEVELOPMENT OF MINERAL RESOURCES

Impacts On Mining Claims And Mineral Leases

Under the All Wilderness Alternative, 689 mining claims would be subjected to wilderness management. The majority of these claims lie within the Florida Mountains, West Potrillo Mountains/Mount Riley, Organ Mountains, Cooke's Range and Sierra Ladrones WSAs (see Table 4-3). Although the kinds of impacts on operations on mining claims would be similar to those described under the Proposed Action, the overall magnitude of the impacts associated with the All Wilderness Alternative would be increased because almost one and one-half times more mining claims would be affected.

Several oil and gas leases and two geothermal leases would be impacted by implementation of the All Wilderness Alternative. Since it is anticipated that virtually all active mineral leases would stipulate no surface occupancy as of the date of wilderness designation, only leases lying within close proximity to wilderness boundaries could be economically developed.

Impacts On Mineral Resource Development

Table 4-4 summarizes the acreages of high and moderate mineral resource potential, by commodity, identified for withdrawal under the All Wilderness Alternative. The individual acreages of high and moderate mineral resource potential associated with each WSA is summarized in Appendix A.

Impacts On Energy Resources

The All Wilderness Alternative would withdraw approximately 1.2 percent of New Mexico's areas of potentially surface mineable coal resources (see Table 4-5). The potentially surface mineable coal resources which would be impacted are associated with the Ah-shi-sle-pah and La Lena WSAs. Approximately 1 percent of New Mexico's areas most favorable for geothermal development are proposed for withdrawal under this alternative (see Table 4-6). Also, 1.5 percent of New Mexico's areas of high oil and gas potential and 0.3 percent of areas within known oil and gas producing provinces would be withdrawn (see Table 4-7). Since the highest potential oil, gas, and coal lands in New Mexico are only minimally restricted at present, and since geothermal resource development is not anticipated to rapidly increase in the near future, the All Wilderness Alternative would have minimal impacts on coal, geothermal, oil and gas resource development.

The only potentially significant impact on uranium resource development under the All Wilderness Alternative is site-specific and associated with the Sierra Ladrones WSA (see Table 4-8). The northeastern portion of the Sierra Ladrones WSA lies less than $\frac{1}{2}$ mile west of the Jeter Uranium Mine. This mine has had the largest New Mexico production of any New Mexican uranium mine outside of the Grants Uranium District. Economic extensions or sources of the uranium mineralization may lie within the Sierra Ladrones WSA.

The New Mexico Bureau of Mines hypothesizes that a Precambrian, stratabound, nickel-cobalt bearing, copper-uranium deposit within the Sierra Ladrones may have provided the source of the Jeter Mine's mineralization.

Until additional evidence is available, any alternative which recommends the Sierra Ladrones WSA for wilderness designation must be considered to have potentially significant impacts on the development of uranium resources.

Impacts On Metallic Resources

Impacts on the availability of metallic resources associated with the All Wilderness Alternative are shown on Table 4-9. Under the All Wilderness Alternative, approximately 10 percent of New Mexico's manganese resource areas would be withdrawn. Approximately 3 to 5 percent of New Mexico's copper, gold, lead, silver, vanadium, and zinc resource areas would be withdrawn. Impacts on potential bismuth, cobalt, nickel, tellurium, and tin resources are identical to those outlined under the Proposed Action. Assuming that all copper resource lands in New Mexico have an equal probability of going into production, it is estimated that the present value of copper resources which would be withdrawn under this alternative is about \$56 million (see Appendix A).

Impacts On Nonmetallic Resources

The All Wilderness Alternative would withdraw approximately 7 percent of the barite resource areas and 4.5 percent of the fluorite resource areas in New Mexico (see Table 4-9).

Extensive areas with potentially economic barite and fluorite deposits are presently under Federal withdrawal in New Mexico. Although no significant National impact is foreseen, local impacts are anticipated, as opportunities to develop small mines would be foregone.

Conclusion - Impacts on Exploration and Development of Mineral Resources. Under the All Wilderness Alternative, it is anticipated that active mineral leases at the time of designation would not be significantly affected. Impacts on the development of energy and mineral resources would be minimal to insignificant. Due to the present limited access to areas with potential barite and fluorite deposits in New Mexico, only locally significant impacts would be anticipated if the All Wilderness Alternative was chosen.

IMPACTS ON LIVESTOCK GRAZING USE LEVELS

Under the All Wilderness Alternative, use of approximately 278 miles of vehicle ways would be eliminated or curtailed. Of this amount, it is estimated that approximately one-third or 93 miles are specifically used by livestock operators and ranchers to drive to rangeland developments, to distribute salt or feed supplement, or to check livestock distribution and condition (see Table 3-9 for the miles of vehicle ways for each WSA by alternative). Although specific sites have not yet been identified, the following rangeland developments are proposed for allotments which include portions of WSAs recommended as suitable: 1.3 miles of fence, 3 dirt tanks, 6.7 miles of pipeline, and 7 troughs. Wilderness designation would have no impact on these proposals if they were constructed outside the wilderness boundaries. These developments could be constructed within designated wilderness; however, they would be subject to the constraints of the BLM Wilderness Management Policy. These constraints relate to design,

location, and maintenance. They include construction with the use of native/natural materials and preclusion of motorized access for maintenance of new developments. Such constraints can be expected to increase construction and maintenance costs.

Because of the relatively low number of proposals and the fact that most of these projects could be constructed outside of the area designated as wilderness, no Statewide impacts on proposed rangeland developments are anticipated.

Potential adverse impacts associated with unrestricted access and vehicle use would be avoided on 949,919 acres. Without wilderness designation, increases in vehicle related public use is anticipated. This is expected to result in potential for increased vandalism, harassment and theft of livestock, littering, indiscriminate dumping, and increased erosion.

Conclusion - Impacts on Livestock Grazing Use Levels. Under the All Wilderness Alternative, no impacts would result on existing livestock grazing use levels. Also, because such a low percentage (1.60) of the grazing land in New Mexico would be added to wilderness and most of the proposed rangeland developments could be constructed outside of the wilderness boundaries, no Statewide impacts are projected.

EMPHASIS ON MANAGEABILITY ALTERNATIVE

The primary difference between this alternative and the All Wilderness Alternative is the consideration given to long-term wilderness management. Only those areas which could reasonably be maintained as wilderness over the long-term are recommended as suitable for wilderness designation. The wilderness values in 37 areas covering 686,113 acres of public land would be maintained. A total of 267,160 acres of public land would be recommended as nonsuitable for wilderness designation. This nonsuitable acreage consists of 10 WSAs and portions of 17 other WSAs.

IMPACTS ON WILDERNESS VALUES

Impacts On Naturalness

The natural landscape of the 37 WSAs recommended suitable for wilderness designation would be maintained. Represented landscapes include lava flows, forested mountains, rivers, and the more typical desert mountains and lowlands of the Southwest.

Improvement in the naturalness of these WSAs would occur as a result of eliminating or curtailing vehicle use on 239 miles of vehicle ways. Rehabilitation of these vehicle ways would occur slowly through weathering and natural revegetation.

Resource use and development of 267,160 acres recommended nonsuitable for wilderness designation would result in modifications to the existing natural landscape of the areas. Energy and mineral exploration and development, including road construction in areas with a moderate and high potential for the occurrence of such commodities, would result in the removal of vegetation, soil, and rocks. ORV use on and near these new mining roads, as well as the continued use of 39 miles of vehicle ways would further reduce the apparent naturalness in the areas.

Impacts On Outstanding Opportunities For Solitude And Primitive Recreation

Solitude opportunities would be maintained within the 37 WSAs, totalling 686,113 acres, recommended suitable. The outstanding solitude opportunities in the WSAs recommended suitable for wilderness designation would be improved through closure of the areas to ORV use, including the closing of 239 miles of existing unimproved vehicle ways.

A total of 593,243 acres in 27 WSAs recommended suitable for wilderness designation provide outstanding opportunities for primitive and unconfined recreation. In addition to the opportunities identified under the Proposed Action, the following opportunities would be maintained under the Emphasis On Manageability Alternative:

- Backpacking in the Florida Mountains and Eagle Peak WSAs.
- Big game hunting in the San Antonio and Florida Mountains WSAs.
- Wildlife observation and photography in the Florida Mountains and San Antonio WSAs.

Solitude and primitive recreation opportunities would be diminished on 267,160 acres recommended nonsuitable for wilderness designation, a result of road building in support of energy and mineral exploration and development, as well as through ORV use. Examples of the primitive recreation opportunities which would be impaired include:

- Hunting in the Cooke's Range WSA.
- Hiking in the Presilla WSA.
- Wildlife viewing in the Cooke's Range WSA.
- Natural landscape photography in the Eagle Peak WSA.

Impacts On Special Features

Special features are wilderness characteristics which contribute to a WSA's unique value for wilderness designation. These features include ecological, geologic, and other features of scientific, educational, scenic, or historical value. In addition to features identified under the Proposed Action, the following special features would be afforded the protection of wilderness designation under the Emphasis On Manageability Alternative:

- Golden eagle, great horned owl, prairie falcon and red-tailed hawk nesting sites in the Florida Mountains WSA.
- Wild and free roaming horses in the Stallion WSA.

Special features in the areas recommended nonsuitable for wilderness designation could be impacted by resource use and development. These special features include raptor nesting sites in the Cooke's Range WSA.

Impacts On National Wilderness Preservation System Diversity

The NWPS would be expanded and diversified through implementation of this alternative. New ecosystem representations would be added to the NWPS and additional solitude and recreation opportunities would be provided within a 5 hour drive of the SMSAs.

The ecosystem and acres to be included in the NWPS under this alternative are shown on Table 4-1. The main benefit over the Proposed Action would be the increased acreage of each ecosystem to be represented in the NWPS. The 12,391-acre Oak Juniper Woodland Scrub Ecosystem in the Mexican Highlands Shrub Steppe Province would not be added to the NWPS. This ecosystem is in the Alamo Hueco Mountains WSA and is unique in that it is not nationally represented in any other area currently designated as wilderness or under wilderness review by BLM or any other agency.

The number of new wilderness areas and the total acreage added to the system within 5 hours drive of each SMSA is shown on Table 4-2. Opportunities would be expanded by 12 percent over the Proposed Action. The primary benefit would be in the expanded spring, fall and winter recreational use seasons provided by these desert regions.

Conclusion - Impacts on Wilderness Values. Under the Emphasis on Manageability Alternative, the natural landscape in 37 WSAs (686,113 acres) would be maintained. Improvement in the quality of naturalness on less than 1 percent of the area would result. Maintenance of solitude and primitive recreation opportunities would be expanded. Under this alternative, archaeological sites, raptor habitat, bighorn sheep habitat, opportunities to study melanistic species, and unique vegetative communities would be preserved. There would be 17 new ecosystems added to the NWPS.

Wilderness values, including naturalness, solitude, and recreation opportunities, would be diminished on 267,160 acres recommended nonsuitable for wilderness designation.

IMPACTS ON EXPLORATION AND DEVELOPMENT OF MINERAL RESOURCES

Impacts On Mining Claims And Mineral Leases

Under the Emphasis on Manageability Alternative, 576 mining claims would be subjected to wilderness management. The majority of these claims lie within the Florida Mountains, West Potrillo Mountains/Mount Riley, Organ Mountains, and Sierra Ladrones WSAs (see Table 4-3). The types of restrictions and related impacts would be similar to those identified for the Proposed Action. This also applies to mineral leases.

Impacts On Mineral Resource Development

Table 4-4 summarizes the acreages of high and moderate mineral resource potential, by commodity, identified for withdrawal under the Emphasis on Manageability Alternative. The individual acreages of high and moderate mineral resource potential associated with each WSA is summarized in Appendix A.

Impacts On Energy Resources

The Emphasis on Manageability Alternative would withdraw approximately 0.5 of a percent of the lands within New Mexico that have surface mineable coal resources. In addition, approximately 1 percent of New Mexico's coal resources with less than 3,000 feet of overburden would also be withdrawn (see Table 4-5). Impacts on geothermal, oil, gas, and uranium resources would be minimal (see Tables 4-6 through 4-8). Thus, overall, no significant Statewide impact is identified.

Impacts On Metallic Resources

Impacts on the availability of New Mexico's metallic resources associated with the Emphasis on Manageability Alternative are outlined on Table 4-9. Under this alternative, approximately 6 percent of New Mexico's manganese resource areas and approximately 2 to 3 percent of New Mexico's copper, lead, and zinc resource areas would be withdrawn. Also, approximately 1.5 percent of New Mexico's bismuth, gold, silver, and tellurium resource areas would be

withdrawn. Impacts on potential cobalt, nickel, and tin resources are identical to those outlined under the Proposed Action. Assuming that all copper resource lands have an equal probability of going into production, it is estimated that the present value of copper resource to be withdrawn under this alternative is \$33 million. Thus, the only Statewide impacts on metallic resources would be on exploration and possible development of tin, cobalt, and nickel.

Impacts On Nonmetallic Resources

The Emphasis on Manageability Alternative would withdraw approximately 5 percent of the barite resource areas and 3 percent of the fluorite resource areas in New Mexico (see Table 4-9). Although no significant National impact is foreseen, local impacts would be anticipated, since opportunities to develop small mines would be foregone.

Conclusion - Impacts on Exploration and Development of Mineral Resources. Under the Emphasis on Manageability Alternative, it is anticipated that active mineral leases at the time of designation would not be significantly affected. Impacts on development of energy and mineral resources would be minimal to insignificant. Due to the present limited access to areas with potential barite and fluorite deposits in New Mexico, locally significant impacts may occur since opportunities to develop these resources would be foregone.

IMPACTS ON LIVESTOCK GRAZING USE LEVELS

Use of approximately 239 miles of vehicle ways would be eliminated or curtailed. Of this amount, it is estimated that approximately one-third or 80 miles are specifically used by livestock operators and ranchers to drive to rangeland developments, to distribute salt or feed supplement, or to check livestock distribution and condition (see Table 3-9 for the miles of vehicle ways for each WSA under this alternative).

Although specific sites have not yet been identified, the following rangeland developments are proposed for allotments which include portions of WSAs recommended as suitable: 1.3 miles of fence, 6 dirt tanks, 8.7 miles of pipeline, and 7 troughs. Wilderness designation would have no impacts on these proposals if they were constructed outside the wilderness boundaries. These developments could be constructed within designated wilderness; however, they would be subject to the constraints of the BLM Wilderness Management Policy. These constraints relate to design, location, and maintenance. They include construction with the use of native/natural materials and preclusion of motorized access for maintenance of new developments. Such constraints can be expected to increase construction and maintenance costs.

Because of the relatively low number of proposals and the fact that most of these projects could be constructed outside of the area designated as wilderness, no Statewide impacts on proposed rangeland developments are anticipated.

Use of the acreage in those WSAs recommended nonsuitable for wilderness (267,160 acres) would no longer be managed to protect wilderness values. Restrictions on access would be discontinued, which would probably result in vandalism to and theft of rangeland developments, harassment and theft of livestock, gates left open, littering, indiscriminate dumping, and acceleration of erosion by vehicular use both on and off vehicle ways. Rangeland development proposals could be implemented on these allotments within WSA boundaries without the wilderness restrictions.

Conclusion - Impacts on Livestock Grazing Use Levels. Under the Emphasis on Manageability Alternative, no impacts would result on existing livestock grazing use levels. Also, because such a low percentage (1.07) of the grazing land in New Mexico would be added to wilderness and most of the proposed rangeland developments could be constructed outside of the wilderness boundaries, no Statewide impacts are projected.

CONFLICT RESOLUTION ALTERNATIVE

If this alternative were implemented, 13 WSAs totalling 315,931 acres of public land would be recommended as suitable for wilderness designation and a total of 633,988 acres of public land would be recommended as nonsuitable for wilderness designation. This nonsuitable acreage consists of 34 WSAs and portions of 11 other WSAs.

IMPACTS ON WILDERNESS VALUES

Impacts On Naturalness

The natural landscape of the areas recommended suitable would be maintained. The represented landscapes include lava flows, river canyons, and the more typical desert mountains and lowlands of the Southwest.

Improvement in the naturalness of the areas would also occur as a result of eliminating or curtailing vehicle use on 125 miles of vehicle ways. Rehabilitation of these vehicle ways would occur slowly through weathering and natural revegetation.

Resource use and development of 633,988 acres recommended nonsuitable for wilderness designation would result in modifications to the existing natural landscape of the WSAs. Energy and mineral exploration and development, including road construction, in areas with a moderate and high potential for the occurrence of such commodities, would result in the removal of vegetation, soil, and rocks. ORV use on and near these new mining roads, as well as the continued use of 153 miles of vehicle ways would further reduce the apparent naturalness in the areas.

Impacts On Outstanding Opportunities For Solitude And Primitive Recreation

Solitude opportunities would be maintained within the 13 WSAs, totalling 315,931 acres recommended suitable. The outstanding solitude opportunities in the areas recommended suitable for wilderness designation would be improved through closure of the areas to ORV use, including the closure of 125 miles of existing unimproved vehicle ways.

Primitive recreation opportunities would be maintained within the 13 WSAs, totalling 315,931 acres recommended suitable for wilderness designation. Examples of the opportunities which would be maintained include:

- Floatboating and fishing in the Rio Chama and Gila Lower Box WSAs.
- Backpacking in the Big Hatchet Mountains or in the expansive stretch of Chihuahuan Desert in the West Potrillo Mountains/Mount Riley WSAs.
- Hiking and photography on the stark lava flows of the Aden Lava Flow and the Carrizozo Lava Flow/Little Black Peak WSAs.
- Hunting in the Ignacio Chavez, Sierra de las Canas, Cowboy Spring, and Horse Mountain WSAs.

- Birdwatching for such species as the Gila woodpecker, bald eagle, zone-tailed hawk, and black hawk in the Gila Lower Box WSA.

Solitude and primitive recreation opportunities would be diminished on 633,988 acres recommended nonsuitable for wilderness designation. This would result from road building in support of energy and mineral exploration and development, as well as through ORV use. In addition to opportunities identified under the Proposed Action, the quality of the following opportunities would be impaired under the Conflict Resolution Alternative:

- Rock-climbing in the Organ Mountains WSA.
- Backpacking in the high mountains of the Sierra Ladrones and Continental Divide WSAs.
- Hiking and photography in the picturesque mountains of the Rimrock, Little Rimrock, Pinyon, and Sand Canyon WSAs.
- Hiking and photography in the badlands of the Ah-shi-sle-pah WSA.
- Hiking on the proposed Continental Divide National Scenic Trail in the Continental Divide WSA or on the Baylor Pass National Recreation Trail in the Organ Mountains WSA.
- Hiking and photography on the stark lava flows of the Jornada del Muerto WSA.
- Hunting in the Sierra Ladrones WSA.

Impacts On Special Features

Special features are optional wilderness characteristics which contribute to an area's unique value for wilderness designation. They include ecological, geologic, and other features of scientific, educational, scenic, or historical value. Some of the features included in the suitable areas are:

- Golden eagle, great horned owl, prairie falcon, and red-tailed hawk nesting sites in the Cabezon, Ignacio Chavez, and Gila Lower Box WSAs.
- Chama River in the Rio Chama WSA and the Gila River in the Gila Lower Box WSA.
- Bighorn sheep in the Big Hatchet Mountains WSA.
- Studies on melanistic species in the lava flows of the Aden Lava Flow and the Carrizozo Lava Flow/Little Black Peak WSAs.
- Mountain lions in the Big Hatchet Mountains WSA.
- The relatively undisturbed and expansive stretch of Chihuahuan Desert in the West Potrillo Mountains/Mount Riley WSAs.

Special features in the WSAs recommended nonsuitable for wilderness designation could be impacted by resource use and development. In addition to the special features identified under the Proposed Action, the following

special features could also be impaired under the Conflict Resolution Alternative:

- Golden eagle, great horned owl, prairie falcon and red-tailed hawk nesting sites in the Sierra Ladrones WSA.
- The potential reintroduction of bighorn sheep in the Sierra Ladrones WSA.
- Studies on melanistic species in the Jornada del Muerto WSA.
- Mountain lions in the Continental Divide and Sierra Ladrones WSAs.
- The 163-acre enclave of western ponderosa forest within the Organ Mountains WSA.

Impacts On National Wilderness Preservation System Diversity

The NWPS would be expanded and diversified through implementation of this alternative. Ecosystems not currently represented would be added to the system and approximately 33 percent of the existing solitude and recreation opportunities within a day's driving time (5 hours) of the SMSAs would be maintained.

The ecosystems and acres which would be included in the NWPS under this alternative are shown on Table 4-1. The Oak Juniper Woodland Scrub Ecosystem within the Alamo Hueco Mountains WSA and the Mountain Mahogany Oak Scrub Ecosystem in the Chihuahuan Desert Province would not be represented in the NWPS.

The number of new wilderness areas and total acreage added to the system within 5 hours drive of each SMSA is shown on Table 4-2. The primary benefit would be in the expanded spring, fall, and winter use seasons provided by these desert regions. Opportunities would however, be reduced by approximately 24 percent in comparison to the Proposed Action.

Conclusion - Impacts on Wilderness Values. Under the Conflict Resolution Alternative, the natural landscape in 13 WSAs (315,931 acres) would be maintained. The represented landscapes are the same as those in the Proposed Action, with the difference being less acreage represented. Improvement in the quality of naturalness on less than 1 percent of the area would result. Under this alternative, archaeological sites, raptor habitat, bighorn sheep habitat, opportunities to study melanistic species, and unique vegetative communities would be preserved. There would be 13 new ecosystems added to the NWPS. The Mountain Mahogany Oak Scrub, Western Ponderosa Forest, Great Basin Sagebrush, Trans Pecos Shrub Savanna, and Grama Galleta Steppe Ecosystems would not be added to the NWPS.

Wilderness values, including naturalness, solitude, and recreation opportunities, would be diminished on 633,988 acres recommended nonsuitable for wilderness designation.

IMPACTS ON EXPLORATION AND DEVELOPMENT OF MINERAL RESOURCES

Impacts On Mining Claims And Mineral Leases

Under the Conflict Resolution Alternative, 128 existing mining claims would be subjected to wilderness management. The types of impacts associated with restrictions to activities on mining claims are similar to those identified under the Proposed Action. Although a few oil and gas leases would be encumbered by this alternative, no other types of mineral leases would be affected.

Impacts On Mineral Resource Development

Table 4-4 summarizes the acreage of high and moderate mineral resource potential, by commodity, identified for withdrawal under the Conflict Resolution Alternative. The individual acreages of high and moderate mineral resource potential associated with each WSA is summarized in Appendix A.

Impacts On Energy Resources

Implementation of the Conflict Resolution Alternative would withdraw relatively insignificant areas of coal, geothermal, oil, and gas resources (see Tables 4-5 through 4-7). Also, since the Sierra Ladrones WSA is recommended nonsuitable under this alternative, insignificant areas of uranium resource potential would be withdrawn (see Table 4-8). Under this alternative, no impacts on energy resources are anticipated.

Impacts On Metallic Resources

Approximately 1 percent of lead resource areas and three to five tenths of 1 percent of copper and zinc resource areas of New Mexico would be withdrawn under this alternative. Assuming that all copper resource lands in New Mexico have an equal probability of going into production, it is estimated that the present value of copper resources to be withdrawn under the Conflict Resolution Alternative is \$8 million. No significant National or Statewide impact to metallic resources are anticipated under this alternative.

Impacts On Nonmetallic Resources

The only potential impacts on nonmetallic resource development under this alternative are associated with barite resources. Approximately 1.5 percent of New Mexico's barite resources would be withdrawn and little or no impacts are anticipated. No significant Statewide or National impacts on nonmetallic mineral resource development are anticipated under the Conflict Resolution Alternative.

Conclusion - Impacts on Exploration and Development of Mineral Resources. There would be essentially no effect on mineral leases under this alternative. Virtually no uranium or coal resources would be affected, and no significant impacts would be associated with geothermal or petroleum resources. Under this alternative, some opportunities to develop lead, barite, and fluorite deposits would be foregone, which would lead to only very local impacts.

IMPACTS ON LIVESTOCK GRAZING USE LEVELS

Use of approximately 125 miles of vehicle ways would be eliminated or curtailed. Of this amount, it is estimated that approximately one-third or 42 miles are specifically used by livestock operators or ranchers to drive to rangeland developments, to distribute salt or feed supplement, or to check livestock distribution and condition (see Table 3-9 for the miles of vehicle ways for each WSA in this alternative).

Although specific sites have not yet been identified, the following rangeland developments are proposed for allotments which include portions of WSAs recommended as suitable: 1.3 miles of fence, 1 dirt tank, 6 miles of pipeline, and 7 troughs. Wilderness designation would have no impacts on these proposals if they were constructed outside the wilderness boundaries. These developments could be constructed within designated wilderness; however, they would be subject to the constraints of the BLM Wilderness Management Policy. These constraints relate to design, location, and maintenance. They include construction with the use of native/natural materials and preclusion of motorized access for maintenance of new developments. Such constraints can be expected to increase construction and maintenance costs.

Because of the relatively low number of proposals and the fact that most of these projects could be constructed outside of the area designated as wilderness, no Statewide impacts on proposed rangeland developments are anticipated.

Use of the acreage in those WSAs recommended nonsuitable for wilderness designation (633,988 acres) would no longer be managed to protect wilderness values. Restrictions on access would be discontinued, which would probably result in vandalism to and theft of rangeland developments, harassment and theft of livestock, gates left open, littering, indiscriminate dumping, and acceleration of erosion by vehicular use both off and on vehicle routes. Rangeland development proposals could be implemented on these allotments without the wilderness restrictions.

Conclusion - Impacts on Livestock Grazing Use Levels. Under the Conflict Resolution Alternative, no impacts would result on existing livestock grazing use levels. Also, because such a low percentage (0.49) of the grazing land in New Mexico would be added to wilderness and most of the proposed rangeland developments could be constructed outside of the wilderness boundaries, no Statewide impacts are projected.

NO WILDERNESS ALTERNATIVE

Under this alternative, all 47 WSAs, totalling 949,919 acres of public land, would be recommended as nonsuitable for wilderness designation. The wilderness values which would be lost due to resource use and development are discussed below.

IMPACTS ON WILDERNESS VALUES

Impacts On Naturalness

Over time, naturalness would be diminished or lost entirely on most of the 949,919 acres of public land in 47 WSAs due to resource use and development. The modifications to the natural environment would result from energy and mineral exploration and development, including road construction in areas with a moderate and high potential for the occurrence of such commodities; construction of fences, water holding facilities, and roads in support of livestock operations; and the continued use and likely expansion of 278 miles of existing vehicle ways and the establishment of new vehicle ways over the long-term.

Impacts On Outstanding Opportunities For Solitude And Primitive Recreation

Solitude and primitive recreation opportunities would be irrevocably impaired on most of 949,919 acres of public land in 47 WSAs due to resource use and development over the long-term. This would result from intensive livestock management and road building in support of energy and mineral exploration and development, as well as through growing ORV use. In addition to the opportunities identified under the Proposed Action, the quality of the following outstanding opportunities would be impaired under the No Wilderness Alternative.

- Rock-climbing in the Cabezon and Organ Mountains WSAs.
- Backpacking in the pristine high mountains of the Sierra Ladrones and Continental Divide WSAs or in the expansive stretch of Chihuahuan Desert in the West Potrillo Mountains/Mount Riley WSAs.
- Hiking on a primitive portion of the Continental Divide National Scenic Trail in the Continental Divide WSA or on the Baylor Pass National Recreation Trail in the Organ Mountains WSA.
- Hiking and photography in the picturesque mountains of the Rimrock, Little Rimrock, Pinyon, and Sand Canyon WSAs.
- Hiking and photograph in the badlands of the Ah-shi-sle-pah WSA.
- Hiking and photography on the stark lava flow in the Jornada del Muerto WSA.
- Hunting in the Ignacio Chavez, Sierra de las Canas, Horse Mountain, and Sierra Ladrones WSAs.

Impacts On Special Features

Special features are wilderness characteristics which contribute to an area's unique value for wilderness designation, including ecological, geologic, and other features of scientific, educational, scenic, or historical value. Some of the special features occurring in the WSAs could be impaired over the long-term as a result of energy and mineral exploration and development, construction of rangeland facilities, and ORV use. In addition to the special features identified under the Proposed Action, the following special features could also be impaired under the No Wilderness Alternative:

- Golden eagle, great horned owl, prairie falcon, and red-tailed hawk nesting sites in the Cabezon, Ignacio Chavez, and Sierra Ladrones WSAs.
- Bighorn sheep in the Big Hatchet Mountains WSA and the potential reintroduction of bighorn sheep in the Sierra Ladrones WSA.
- Mountain lions in the Continental Divide, Sierra Ladrones, and Big Hatchet Mountains WSAs.
- The relatively undisturbed and expansive stretch of Chihuahuan Desert in the West Potrillo Mountains/Mount Riley WSAs.

Without restrictions on vehicle use, vandalism to cultural sites is expected to increase; however, cultural resource special features would continue to be protected and managed under the Antiquities Act of 1906, the National Historic Preservation Act of 1966, the Federal Land Policy and Management Act of 1976, the American Indian Religious Freedom Act of 1978, as amended, and the Archaeological Resource Protection Act of 1979. However, other forms of multiple use will lead to increased use of all types and increased conflicts with sensitive resources. Protection and management of the wild horses in the Stallion WSA would continue to be guided by the Wild Horse and Burro Act of 1971, as amended.

Impacts On National Wilderness Preservation System Diversity

Expansion and diversification of the NWPS would not occur under this alternative. Ecosystems not currently represented in the NWPS would not be added to the system and existing solitude and primitive recreation opportunities within 5 hours drive of the SMSAs would not be maintained.

The potential for adding most of the ecosystems represented in the WSAs to the NWPS is present only in the New Mexico WSAs. This is particularly true for the ecosystems in the Chihuahuan Desert Province, Colorado Plateau Province, and Mexican Highlands Shrub Steppe Province. Existing and potential ecosystem representation in the NWPS is shown on Table 3-2. The ecosystems represented in each WSA are shown on Table 3-1.

New wilderness areas within a 5-hour drive of the SMSAs would not be added to the NWPS. Increased demand for wilderness-related solitude and primitive recreation opportunities would have to be provided by the existing designated wilderness areas in the region. Over the long-term, any increases in demand would have to be regulated to prevent overuse of the existing designated wilderness areas or degradation of this existing resource would occur.

Conclusion - Impacts on Wilderness Values. Under the No Wilderness Alternative, wilderness values, including naturalness, solitude, and recreation opportunities, would be diminished or lost entirely on 949,919 acres recommended nonsuitable for wilderness designation. Ecosystems within the Chihuahuan Desert Province, Colorado Plateau Province, and Mexican Highlands Shrub Steppe Province would not be included in the NWPS.

IMPACTS ON EXPLORATION AND DEVELOPMENT OF MINERAL RESOURCES

Wilderness restrictions would not affect exploration and possible development of energy and mineral resources on 949,919 acres. This includes 18,100 acres which have a high potential for coal, 5,800 acres which have a high potential for oil and gas, 1,800 acres which have a high potential for uranium, 8,100 acres which have a moderate potential for cobalt and nickel, 16,600 acres which have a moderate potential for tin, 13,400 acres which have a moderate potential for barite, and 12,900 acres which have a moderate to high potential for fluorspar. A complete list of the mineral potential acres by commodity and WSA is included in Appendix A and the appended WARs.

All mineral resources would be open to exploration and development, pursuant to existing regulations and prior classifications. In the short-term, activity would continue at a lower degree to that which was occurring prior to WSA designation due to the recent depressed condition of the U.S. mining industry. In the long-term, activity would probably fluctuate, and periods of more intense activity would be expected.

Conclusion - Impacts on Exploration and Development of Mineral Resources. Implementation of the No Wilderness Alternative would have no major impacts on the existing availability of New Mexico's known or potential energy and mineral resources.

IMPACTS ON LIVESTOCK GRAZING USE LEVELS

The use of 278 miles of vehicle ways by the public would continue. The rangeland developments proposed for development within the allotments overlapping the WSAs boundaries could be constructed within the WSA boundaries without wilderness constraints. This includes 1.3 miles of fence, 3 tanks, 6.7 miles of pipeline, and 7 troughs. (See Table 3-9.)

Pressures for use of these 949,919 acres of public land is expected to increase. Public interest in minerals (both energy and nonenergy), ORV driving, backpacking, hunting, camping, and other outdoor activities would increase, generally focusing on these areas because of those unique qualities which resulted in their consideration as potential wilderness areas. These increases in activity and continued unlimited access would impact the livestock grazing operations in these areas. Vandalism to and theft of rangeland developments, harassment to and theft of livestock, gates left open allowing livestock to wander, littering, and indiscriminate dumping would all be expected to increase. A secondary impact would be acceleration of erosion caused by the expected increase in traffic, causing increased sedimentation in stock tanks, increased soil loss, and loss of vegetation.

Conclusion - Impacts on Livestock Grazing Use Levels. Under the No Wilderness Alternative, public pressures would not impact existing livestock grazing use levels; however, public pressures could cause impacts and inconveniences to livestock operations.

CHAPTER 5

Consultation & Coordination



CHAPTER 5

Consultation & Coordination

CHAPTER 5

CONSULTATION AND COORDINATION

INTRODUCTION

This chapter summarizes the Bureau of Land Management's (BLM's) efforts to obtain input from internal consultation, other government agencies, private industry, special interest groups, and individual members of the public during development of this Environmental Impact Statement (EIS), a process known as scoping. The purpose of scoping was to obtain information to identify the environmental issues, criteria, and alternatives to be included in the analysis. The identification of issues began in 1980 when BLM formulated the New Mexico Wilderness Study Area (WSA) Decisions. Since that time, there has been considerable public involvement, particularly during preparation and review of the Draft and Final District Wilderness Environmental Assessments (EAs) and Wilderness Analysis Reports (WARs).

The issues included in the EIS and the WARs have been identified through the extensive and open review process utilized throughout this Wilderness study.

SCOPING ACTIONS

Scoping actions for site-specific concerns are identified in the consultation and coordination portions of the WARs. Public scoping actions for the Draft EIS were conducted from July through December, 1984. Major actions included distribution of informational brochures, open house meetings, small group meetings, and discussions with representatives of various interest groups and agencies. Other actions to inform the public of review and comment opportunities included issuance of news releases, public service announcements, and radio and TV interviews.

Brochures describing the proposed issues and alternatives for the Statewide Wilderness EIS were mailed to 3,500 members of the public. The brochures also included invitations to submit written or verbal comments and to attend 7 open house meetings. These meetings were held between September 11 and 20, 1984, in Taos, Santa Fe, Albuquerque, Socorro, Las Cruces, and Roswell, New Mexico and El Paso, Texas.

A total of 137 people attended the 7 public scoping meetings. The majority of comment at these meetings was general and did not relate specifically to the alternatives and issues to be analyzed. Common general comments were: questions on wilderness analysis and designation procedures; recommendation that all WSAs be designated; recommendations that no WSAs be designated; site-specific interests in designation or nondesignation; and disagreement with the acreage listed in BLM's proposed alternatives.

On May 1, 1985, BLM issued for public comment, a Draft EIS for the New Mexico Statewide Wilderness Study. This document was prepared before the decision was made to study split-estate and areas less than 5,000 acres. Because this decision affected 19 WSAs and added approximately 150,000 acres

to the Statewide study, a major revision was necessary. BLM decided to use comments on the Draft EIS as additional scoping input and to make revisions to the entire Draft EIS. As a result, the Revised Draft EIS was prepared along with all the WSAs in the Statewide Wilderness Study.

The 90-day public comment period on the Draft EIS resulted in 465 responses. This includes hearing testimony that was given by 28 respondents. The remaining responses were letters and a few BLM response forms. One petition was received. The New Mexico BLM Wilderness Coalition submitted "Alternative W," a proposal for 1.3 million acres of wilderness. A large number of letters in support of Alternative W and in support of specific WSAs appeared to be the result of a write-in campaign initiated by the New Mexico BLM Wilderness Coalition. These letters were individually composed by each respondent and were subsequently not identified or counted as "form letters." However, each letter contained almost identical opinions and reasons.

Approximately 90 percent of the respondents commented on the alternatives. A majority (73 percent of the respondents) favored Alternative W. The All Wilderness Alternative was favored by 17 percent of those commenting. Other alternatives were each supported by 1-2 percent of the respondents.

The most frequently used reasons for supporting Alternative W and the All Wilderness Alternative were:

- o The Nation and New Mexico need more wilderness areas.
- o BLM overstated manageability problems in reaching the preferred alternative.
- o Designation of additional areas will not adversely impact other uses.
- o Mineral and grazing values are low and there would be no major conflicts with wilderness.
- o The value of wilderness outweighs the value of other resources or uses.
- o Designation of more areas will protect unique ecosystems, wildlife, paleontological, scientific, and scenic values.

Another major reason for supporting more wilderness than the preferred alternative was reflected in comments on the adequacy of the analysis. Many respondents said the recommendations were made without benefit of the analysis. They said the analysis led to a conclusion of suitability for many areas, but BLM recommended them unsuitable.

The most frequent reasons given for support of no wilderness or less wilderness than the preferred alternative were:

- o The Nation or New Mexico has enough wilderness.
- o Designation will adversely affect the minerals or livestock industry.
- o It will cause adverse impacts on the economy.
- o Areas would be difficult to manage.
- o Designation would be incompatible with the multiple-use concept.

In addition to comments on alternatives, comments were made on the data and analysis in the Draft EIS. Forty respondents commented on the acceptability of the data included in the EIS. Ten felt the data were

satisfactory. Thirty said essential data were missing or poor. Those who were dissatisfied with the data emphasized that the minerals and recreation data were weak. The adequacy of the analysis in the EIS was commented on by 70 people; 25 felt the analysis was adequate, and 45 said it was inadequate.

Those who felt the analysis was inadequate gave the following major reasons:

- o Analysis seemed adequate but recommendations did not logically follow.
- o Areas were unjustifiably recommended unsuitable for wilderness.
- o Value of wilderness was not adequately considered.
- o Too much weight was placed on nonwilderness values.
- o Need more in-depth analysis.
- o Study should have considered split-estate and areas with less than 5,000 acres.
- o Manageability is not a justifiable reason to recommend nondesignation.
- o BLM recommended only the most outstanding areas.

SCOPING RESULTS

An analysis of scoping results, including each substantive public comment, is shown in Table 5-1. In summary, overall public response to scoping was positive. Most alternatives and issues suggested by the public were already planned for inclusion in the study. A few were rejected for reasons that they were not environmental, were of little importance, or were unreasonable to consider realistically.

TABLE 5-1
SCOPING SUMMARY

Alternatives Raised and Set Aside	Reasons for Not Including this Alternative
Rank WSAs by wilderness values	Consideration was given to ranking the WSAs by the quality of the wilderness values. From such a ranking, various percentage of WSAs could be selected to provide a full spectrum of alternatives, ranging from 0 percent to 100 percent wilderness. This alternative was not analyzed in detail because using quality of wilderness values as the sole criteria does not represent a realistic approach, and the decisionmaker must take other factors (such as resource conflicts) into consideration.
Expand the WSAs	This was not considered as an alternative because it would require consideration of lands not involved in the inventory and lands not protected by the BLM interim management policy. However, there were cases considered where expanding the boundary would be required for management purposes if the area were to be designated as wilderness. These situations are identified in the WARS and were considered only for a select few situations.
Add "Conservation Proposal," also known as Alternative W	A specific Alternative W, with boundaries delineated to identify the 1.3 million acre proposal was not provided to BLM. However, with the addition of split-estate land and the WSAs less than 5,000 acres, the acreage of the BLM All Wilderness Alternative now more closely resembles Alternative W. The acreage of the All Wilderness Alternative in the May 1985 Draft EIS was approximately 786,000 acres. With the inclusion of split-estate and areas less than 5,000 acres, the All Wilderness Alternative in the Statewide Wilderness Study is now 943,000 acres. If El Malpais acreage (157,000 acres), the Ah-shi-sle-pah WSA (6,563 acres), and those areas that are being studied through U.S. Forest Service (USFS) studies (7,117 acres) are added to the All Wilderness Alternative, in excess of 1.1 million acres in New Mexico have been studied by BLM for wilderness. This compares to the 1.3 million acre Alternative W. The difference in acreage appears to consist of lands that were previously dropped from wilderness study because they did not possess mandatory wilderness characteristics, as well as lands in private ownership.

TABLE 5-1
SCOPING SUMMARY
(Continued)

Alternatives Selected for Detailed Analysis	Reasons
<ul style="list-style-type: none"> - All Wilderness - Emphasis on Manageability - Proposed Action - Conflict Resolution - No Wilderness 	<p>These 5 alternatives were selected for detailed analysis for the following reasons:</p> <p>(a) They provide a full spectrum of alternatives from 0 to 100 percent wilderness.</p> <p>(b) They take into consideration all the factors needed for the decisionmaker. These are: quality of wilderness values, resource conflicts, and manageability.</p>
Issues Raised And Set Aside	Reasons for Not Conducting a Detailed Analysis
Do not include mineral resources as an issue	Wilderness study policy requires analysis of impacts on known and potential mineral values.
Consider use of areas by disabled citizens	BLM study policy requires analysis of primitive and unconfined recreation. Disabled and senior citizens can and do use wilderness areas. Those requiring special facilities are considered in overall BLM recreation management planning. Many Federal recreation areas have access and special facilities to accommodate those needs.
Impact of designation on spruce budworm control in WSAs	This issue does not apply to BLM New Mexico WSAs, because no stands of spruce occur in any of these areas.
Hold some WSAs for future designation as future demand grows	Federal Land Policy and Management Act (FLPMA) mandates wilderness recommendations be made to the President by 1991.
Impacts on BLM budget	This issue is outside the scope of a wilderness study and complying with the National Environmental Policy Act. Budget is not a consideration in recommendations on wilderness suitability.
Impacts on low altitude/high speed airspace by military	Wilderness designation does not preclude use of airspace.

TABLE 5-1
SCOPING SUMMARY
(Continued)

Issues Raised And Set Aside	Reasons for Not Conducting a Detailed Analysis (Cont.)
Assess social economic impacts	An assessment of social impacts was done by BLM District and included in the District Final EAs. No additional concerns were identified; therefore, social impacts are not addressed on a Statewide basis. Economic impacts are addressed in the WARs and in the Draft EIS by resource wherever such impacts could be identified or quantified.
Legal access should not constrain BLM's recommendations	Legal access will not be used as a justification for recommendations.
Long-term wilderness demand should be considered in relation to over-crowded U.S. Forest Service wilderness areas	This issue is not being considered in the Statewide EIS as a separate issue; however, as part of the analysis of wilderness values, it is being considered.
Impacts on watershed	No impacts were identified on a Statewide basis; however, impacts to these resources are considered in the appropriate WSA-specific analyses.
Impacts on airshed	No impacts were identified on a Statewide basis or a WSA-specific basis.
Economic benefits of recreation	The economic benefits of recreation is acknowledged; however, low visitor use and the lack of quantification precludes assigning dollar values.
Economic benefits of option values	Such benefits are acknowledged, but cannot be quantified.
Protection of research values and reservoirs of genetic information	Such benefits are acknowledged as part of wilderness values.
Overuse of existing wilderness	This is not addressed as a separate environmental impact issue because it is not an impact from the proposed action being considered; however, in the Statewide EIS it is addressed in the discussion of wilderness values.

TABLE 5-1
SCOPING SUMMARY
(Continued)

Issues Raised And Set Aside	Reasons for Not Conducting a Detailed Analysis (Concl.)
Impacts on wildlife habitat and threatened or endangered species	These impacts are addressed on a WSA-specific basis. No impacts were identified to Threatened or Endangered species on a WSA basis, therefore, this issue is not being analyzed on a Statewide basis. The U.S. Fish and Wildlife Service has concurred with BLM's finding of no affect on species Federally-listed or proposed for listing as threatened or endangered.
Impacts on soil erosion	These impacts are addressed on WSA-specific basis. Little or no impacts were identified. Therefore, no Statewide impacts are assessed.
Impacts to cultural resources	Cultural resources have been identified as a special feature in some WSAs; however, no major impacts to cultural resources were identified, and this issue is not discussed on a Statewide basis.
Impacts on forest products (fuelwood emphasized)	These impacts are addressed in the WARs. No major impacts were identified; therefore no Statewide impacts were assessed.
Impacts on adjacent land	These impacts are addressed in the WSA-specific WARs.
Impacts on water rights	Water rights were considered in the WARs. No major impacts were identified; therefore, this issue is not addressed on a Statewide basis.
Issues Selected for Detailed Analysis	Reasons
Consider conflict resolution over the long-term; not just current known conflicts	Both short-term and long-term conflicts are considered as well as potential conflicts in all analyses.
Impacts on energy and minerals exploration and development	This issue is often a major environmental impact issue in the WARs; therefore, Statewide impacts are of a concern and are identified for detailed analysis.

TABLE 5-1
SCOPING SUMMARY
(Concluded)

Issues Selected for Detailed Analysis	Reasons (Concl.)
Impacts on wilderness values	This issue is the major issue relating to the decision to recommend these areas as suitable or unsuitable for wilderness designation. These WSAs represent the last remaining roadless natural tracts of BLM-administered land in New Mexico which meet the criterion for wilderness study.
Impacts on livestock grazing	No major impacts were identified in the WARs; however, because of the public interest in this issue, livestock grazing use levels are being addressed on a Statewide basis.

REVIEW OF THE REVISED DRAFT EIS

Comments on the Revised Draft EIS were requested from Federal, State, local agencies, and Indian Tribes and private groups listed in Table 5-2 (it should be noted that this is a representative sample only, and does not constitute the entire mailing list).

TABLE 5-2
DOCUMENT RECIPIENTS

Federal Government

Federal Agencies

Department of Agriculture
Soil Conservation Service
Forest Service

Department of Commerce

Department of Defense
U.S. Air Force
U.S. Army
U.S. Navy

Department of the Interior
Bureau of Indian Affairs
Bureau of Mines
Bureau of Reclamation
National Park Service
U.S. Fish and Wildlife Service
Office of Ecological Services
U.S. Geological Survey

Department of Transportation
Federal Aviation Administration
Federal Highway Administration
U.S. Coast Guard

U.S. Immigration and Naturalization
Service

Tribal Government

Acoma Pueblo
Navajo Nation Chairman
Torreon Chapter (Navajo)
Jicarilla Apache Tribe
Jemez Pueblo
Mescalero Apache
Zia Pueblo

Local Government

County Commissioners from
all Counties which contain WSAs

State Government

State of New Mexico Agencies

Bureau of Mines and Mineral Resources

Commerce and Industry Department
Economic Development Division

Department of Finance and Administration
Planning Division
Coordination/Clearinghouse Bureau

Highway Department

State Land Office

Natural Resources Department
Administrative Services Division
Planning Bureau
Heritage Section
Department of Game and Fish
Soil and Water Conservation
Water Resources Division

State Engineer/Interstate Stream
Commission

State Historic Preservation Officer

Special Interest Groups

National Council of Public Land Users
National Wildlife Federation
Natural Resources Defense Council
Navajo Medicine Mens' Association
New Mexico Archaeological Society
New Mexico Citizens for Clean Air
and Water
New Mexico Wilderness Study Committee
Sierra Club
Wildlife Management Institute
Wilderness Society
New Mexico Cattlegrowers
New Mexico Oil and Gas Association

Officials

Governor Garrey Carruthers
Senator Pete Domenici
Senator Jeff Bingaman
Representative Manuel Lujan, Jr.
Representative Bill Richardson
Representative Joe Skeen

TEAM ORGANIZATION

The Revised Draft EIS was prepared by a team from the New Mexico State Office. The WARs were prepared by teams from the District Offices. Report writers, support personnel, and other contributors to the EIS effort are indicated in Table 5-3.

COMMENTS ON THE REVISED DRAFT EIS

Comments on the Revised Draft EIS were obtained from the public, citizens groups, and governmental agencies during the September 2 through December 12, 1986, public comment period. During the public comment period, oral testimony was also obtained at the public hearings which were held in Santa Fe, Albuquerque, and Las Cruces, New Mexico.

A total of 751 oral and written responses were obtained. A list of the respondents appears in Table 5-4. Because of the voluminous amount of comments received on the Revised Draft EIS, only those letters received from agencies having jurisdiction or expertise (Federal, State, and Local Governments and Indian Tribes) are reprinted. For those letters requiring a response that are not reprinted, only the portion of the letter requiring a response was printed.

Comments concerning Statewide issues and Statewide alternatives are discussed and responded to in this volume. Comments on specific WSAs are discussed and responded to in the Consultation and Coordination sections of each WAR which appear in the appendices of the Final EIS. Comments requiring a response were those comments which addressed the adequacy or accuracy of the information and alternatives discussed in the Revised Draft EIS.

Of the 751 responses, 385 respondents commented on alternatives. Two alternatives, which were not evaluated in the Revised Draft EIS, were raised by a significant number of respondents. These alternatives are the New Mexico BLM Wilderness Coalition proposal and the Earth First! proposal. Approximately 48 percent of the respondents who commented on alternatives supported the Wilderness Coalition proposal. This proposal calls for approximately 1.88 million acres of wilderness. This acreage exceeds the BLM All Wilderness proposal because in addition to the BLM WSAs, the Wilderness Coalition proposes for wilderness some former BLM inventory units that were not designated as WSAs, five areas originally studied by the USFS, and substantial acreage of State and Federal lands contiguous to the WSAs.

Approximately 16 percent of the respondents who commented on alternatives favored the Earth First! proposal. This proposal called for approximately 5 million acres of wilderness. This proposal includes an approach similar to the Wilderness Coalition with additional emphasis on combining WSAs and including lands that currently lack naturalness.

Other comments on alternatives included support by 8 percent of the respondents for the All Wilderness Alternative, support by 26 percent for the No Wilderness Alternative, and support for the Proposed Action by 2 percent of the respondents. There were no comments on the Emphasis on Manageability or Conflict Resolution Alternatives.

Comments on adequacy of analysis and adequacy of data tended to focus on site-specific issues of the individual WSAs.

TABLE 5-3
LIST OF PREPARERS STATEWIDE EIS

Name	Responsibility	Education	Experience
Joe Sovcik	Co-Leader EIS Team Overall Coordination	BS Biology	BLM - 7 yrs. Environmental Coordinator EPA - 9 yrs. Biologist, Water Resource Planner
Jon Joseph	Co-Leader EIS Team Wilderness Evaluation and Coordination	BA Recreation Administration	BLM - 8 yrs. Wilderness Specialist/ Outdoor Recreation Planner
Bill Jonas	Energy and Minerals Evaluation	BS Geology BA Anthropology	BLM - 6 yrs. Geologist USGS - 5 mos. Geologist
Ralph Sena	Livestock Grazing	Bachelor of University Studies	BLM - 4 yrs. Natural Resources Specialist 7 yrs. Environmental Specialist BOR - 2 yrs. Outdoor Recreation Planner
Lee Keesling	Public Involvement	BS Management and Administration MS Recreation	BLM - 8 yrs. Public Affairs Specialist 4 yrs. Outdoor Recreation Planner
Tina Garcia	Word Processor and Formatting	High School	BLM - 1 yr. Clerk-Typist
Ralph Leon	Cartographics	Bachelor of Fine Arts	BLM - 10 yrs. Carto. Tech./ Illustrator
<u>Quality Control Review</u>			
John Kenny	Chief, Planning and Environmental Coordination Staff, BLM, NMSO	Hank Wilson	Chief, Mining Law and Saleables, BLM, NMSO
Gary Pavcek	Wilderness Specialist, BLM, Washington Office		
<u>Other Contributors and Reviewers</u>			
Jerry Townsend	Livestock Grazing	John Whitney	Natural Resource Specialist
Jeff Nighbert	Cartographics	Andy Dimas	Cartographics
Troy Bunch	Cartographics (Denver Service Center)	Don Boyer	Printing Specialist
<u>Support</u>			
Liz Vargas	Secretary	Esther Sanchez	Word Processing
Teresa Leyba	Clerk-Typist		

TABLE 5-3
ALBUQUERQUE DISTRICT WILDERNESS ANALYSIS REPORTS
(Continued)

Name	Responsibility	Education	Experience
John Bristol	Albuquerque District WAR Team Leader	BS Landscape Architecture	BLM - 4 yrs. Outdoor Recreation Planner 5 yrs. Landscape Architect
Betty Sladek	Rio Puerco Resource Area (RPRA) WAR Team Leader	BS Forestry MS Planning	BLM - 6 yrs. District Planning Coordinator 6 yrs. Forester
Angela Berger	Recreation, Visual, Wilderness (RPRA)	BS Secondary Education MA Recreation	BLM - 7 yrs. Outdoor Recreation Planner 2 yrs. Dist. Wilderness Program Leader 1 yr. Sup. Multi-Resource Staff (RPRA)
Les Boothe	Livestock Grazing (RPRA)	BS Range Management MS Animal Nutrition	BLM - 2 yrs. Range Con., Private Industry 2 yrs. Reclamation Biologist
Dick Diener	Wildlife, Threatened and Endangered Plants and Animals (RPRA)	BS Zoology	BLM - 10 yrs. Surface Reclamation Specialist USFWS/NMFS - 10 yrs. Supervisory Fisheries, Biologist (R)
Jack Dosset	Forest Products (RPRA)	BS Forestry	BLM - 21 yrs. Forester, Private Industry 5 yrs. Forester
Bill Holsheimer	Geology, Minerals (Taos RA)	BA Geology	BLM - 13 yrs. Geologist
Pat Hester	Minerals,, Geology, Paleontology (RPRA)	BS Geology MS Geology (in progress)	BLM - 1 yr. Geologist, State of Texas 5 yrs. Forester
Joe Jaramillo	Realty Actions (RPRA)	Accounting Certification	BLM - 7 yrs. Realty Spec. 8 yrs. Accountant
Ben Kuykendall	Vegetation, Wildlife (Taos RA)	BS Wildlife/Fisheries	BLM - 9 yrs. Wildlife Biologist 3 yrs. Program Analyst
Tony Lutonsky	Cultural Resources (RPRA)	BA Anthropology	BLM - 12 yrs. Archaeol.
Larry Livingston	Livestock Grazing (RPRA)	BS Range Management (Soils Emphasis)	BLM - 9 yrs. Range Con. SCS - 1 yr. Range Conservationist/Soils
Gerald Martinez	Livestock Grazing (RPRA)	BS Wildlife Science (Range Emphasis)	BLM - 5 yrs. Range Con. 2 yrs. Coop. Student
Tom Mottl	Soil, Watershed (Taos RA)	BS Chemistry	BLM - 7 yrs. USGS - 1 yr. Hydrologist
Darrell R. Musick	Forest Products, Range (Taos RA)	BS Agricultural Economics	BLM - 13 yrs. NRS - 3 yrs. Economist
Gretchen Obenauf	Writer/Editor/Technical Coordinator (RPRA)	BA Anthropology MA Anthropology	BLM - 6 yrs. Archaeologist BIA - 1 yr. Archaeologist NPS - 3 yrs. Archaeologist
Richard Speegle	Recreation, Visual, Wilderness (Taos RA)	BA Recreation MA Recreation	BLM - 9 yrs. Recreation Planner
Dwain Vincent	Air Quality, Ecotypes, Vegetation, Water, Watershed (RPRA)	BS Forestry (Range, Wildlife Emphasis)	BLM - 19 yrs. Range Conservationist
Paul Williams	Cultural Resources (Taos RA)	MS Anthropology	BLM - 6 yrs. Archaeologist

TABLE 5-3
ALBUQUERQUE DISTRICT WILDERNESS ANALYSIS REPORTS
(Continued)

Support Personnel

Paul Applegate	District Manager	George Laskar	Supervisory
Herrick Hanks	AM, Rio Puerco RA		Physical
Dan Wood	AM, Taos RA		Scientist (RPRA)
Rich Fagan	Asst. DM, L&RR	Mike Pool	Supervisory
JoAnn Knight	Chief, Branch of Information Services		Multi-Res. Specialist (RPRA)

Contributors

Myrna Finke	Visual Information Spec.	Irene Rivera	Clerk-Typist
M'Lee Beazley	Secretary	Bob Bewley	Geographer
Emilio Montoya	Cartographic Tech.	Carl Sweeden	Computer Assist.
Dave Pyatt	Work Study Student	Janice Hinds	Clerk-Typist
Karen Malloy	Secretary	Angela Medina	Supervisory Area
Penny Gonzalez	Minerals Clerk		Clerk
Gene Tatum	Environmental Protection Specialist	Karen Davis	Range Clerk

TABLE 5-3
LAS CRUCES DISTRICT WILDERNESS ANALYSIS REPORTS
(Continued)

Name	Responsibility	Education	Experience
C. Dwayne Sykes	LCDO WAR Team Leader	BS Wildlife Science	BLM-10 yrs. Outdoor Recreation Planner. Environmental Coord., Wildlife Biologist, Range Conservationist
Kevin I. Carson	Socorro WAR Coordinator	BS Park Administration	BLM - 6 yrs. Outdoor Recreation Planner/Wilderness Specialist NPS - 2 yrs. Park Technician
Tom Custer	Geology	BS Geology	BLM - 10 yrs. Geologist USFS - 1 yr. Geologist
Isabel Diaz	Cartographic Aid	High School	BLM - 4 yrs. Cartographic Aid
Rena Gutierrez	Writer-Editor	BA Journalism/Mass Communications	BLM - 8 yrs. Public Information Aid, Clerk Typist, Writer-Editor
Kristina Munger	Editorial Assistant	Junior College	BLM - 1 yr. Editorial Assistant FAA - 4 yrs. Medical Records Technician
Lorraine J. Salas	Planning Clerk	High School	BLM - 2 yrs. Planning Clerk (Typing), Clerk Typist
Joe H. Sanchez	White Sands Resource Area WAR Coordinator	BS Range Science	BLM - 5 yrs. Surface Protection Specialist USFS - 2 yrs. Range Conservationist SCS - 3 yrs. Soil Conservationist
Gilbert Valencia	Cartographic Technician		BLM - 9 yrs. Cartographic Technician

Las Cruces District Core Team (1982-1985)

Jeff Jarvis	Las Cruces District Office WAR Team Leader	Kimberly Harrison	Editorial Assistant
Donita Cotter	Technical Coordinator		

Las Cruces/Lordsburg Resource Area

Bruce G. Call	Soils	Joseph I. Torrez	Minerals
Steven C. Hamp	Water Resources	Linda K. Seibert	Wildlife, T/E
Pete M. Laudeman	Cultural Resources	Gerald Sanchez	Social and Economic Conditions
Beatrice A. Wade	Vegetation, Livestock Grazing		

Socorro Resource Area

Wayne Albrecht	Livestock Grazing, Vegetation	Carol Marchio	Soils
Robert Marchio	Livestock Grazing, Vegetation	Laird McIntosh	Vegetation
Bob Prickett	Team Leader (1983-1984)	Bernadine Creager	Realty Actions
Larry Livingston	Livestock Grazing, Vegetation	Wesley Anderson	Wildlife
John Gilmore	Water and Air Quality		

White Sands Resource Area

Konnie Andrews	Minerals	Ben Fish	White Sands WAR Coordinator
Bill Gilbert	White Sands WAR Coordinator		
Robert Lawrence	Livestock Grazing, Vegetation	Sandra J. Hayes	Wildlife
Mike Taylor	Cultural Resources		

TABLE 5-3
ROSWELL DISTRICT WILDERNESS ANALYSIS REPORTS
(Concluded)

Name	Assignment	Education	Experience
Mike Bunker	District WAR Coordinator Carrizozo WAR Team Leader Visual Resources, Minerals, Realty, Wilderness Criteria	BS Forestry	BLM - 13 yrs. Outdoor Recreation Planner, Natural Resource Specialist
Mike Howard	Vegetation, Livestock Grazing (Carrizozo WAR)	BS, MS Wildlife Management	BLM - 6 yrs. Wildlife, Range
Joe Hummel	Recreation, Education/ Research (Carrizozo WAR)	BS Natural Resources	BLM - 6 yrs. Outdoor Recreation Planner
Allan Lemley	Geology, Minerals (Carrizozo WAR)	BS Geology	BLM - 1 yr. Geologist
Linda Rundell	Wildlife, Cultural (Carrizozo WAR)	BS Wildlife Management	BLM - 7 yrs. Environmental Protection Specialist, Outdoor Recreation Planner
Clarence Seagraves	Soil, Water, Air (Carrizozo WAR)	BS Agronomy	BLM - SCS 13 yrs. Soil Scientist
Bob Alward	Mudgetts WAR Team Leader, Visual Resources, Recrea- tion, Education/Research, Realty, Wilderness Criteria	BS Wildlife Management	BLM - 9 yrs. Outdoor Recreation Planner, Recreation Technician
Don Ashby	Livestock Grazing (Mudgetts WAR)	BS Range Science	BLM - 2 yrs. Range Con. USFS - 1½ yrs. Range Tech.
Jess Juen	Wildlife, Threatened and Endangered Species, Vegetation (Mudgetts WAR)	BS Wildlife and Fisheries Science MS Wildlife Management	BLM - 2 yrs. Wildlife Biologist USFS - 1 yr. Wildlife Research
John Novosad	Soil, Water, and Air (Mudgetts WAR)	BS Biology	BLM - 9 yrs. Environmental Protection Specialist, Physical Scientist, Soil Scientist
Gerald Queen	Geology, Minerals (Mudgetts WAR)	BA Earth Science (Geology)	BLM - 3 yrs. Geologist
John Selkirk	Recreation, Visual Res., Wilderness Values (Mudgetts WAR)	BS Park and Recreation Resources	BLM - 3 yrs. Outdoor Recreation Planner
Tom Zale	Cultural Resources (Mudgetts WAR)	BS Anthropology	BLM - 8 yrs. Archaeologist

Support Personnel

Miguette Schepeoff Typist
Bobbe K. Young Typist

Contributors and Reviewers

Francis R. Cherry, Jr. DM, Roswell
David Mari Associate DM, Roswell
Phil Kirk AM, Roswell
Charles Dahlen AM, Carlsbad

LIST OF THOSE WHO SUBMITTED COMMENT ON
THE REVISED DRAFT EIS

ID NO.	NAME	ORGANIZATION	ID NO.	NAME	ORGANIZATION
0001	CLIFTON DEAN		0077	DONALD L. MYERS	
0002	WOODIE R. HUGHES		0078	MARC GREENBLATT	
0003	MRS. EUGENE HOOD		0079	JOHN SOMERS	
0004	E. W. BURRIS		0080	EDSAL CHAPELLE	
0005	MARGIE CLIFTON		0081	MARY STEWART	
0006	RAYMOND CLIFTON		0082	DONALD MEADERS	
0007	RALPH WALKER		0083	CLIFF FOREMAN	
0008	JOHN P. WILSON		0084	TRACY L. WILLIAMS	
0009	VERNA L. HUGHES		0085	DEIDRA DEAN	
0010	A. J. HUGHES	HUGHES RANCH	0086	CHICO DOFF	
0011	DEBBIE HUGHES	HUGHES RANCH	0087	ALAN JOHNSON	
0012	MRS. GARFIELD LESTER		0088	STEVEN R. GOODMAN	
0013	MELVIN W. CLIFTON		0089	MRS. DILYS UPTON	
0014	CHARLES HUGHES		0090	RON MITCHELL	EARTH FIRST!
0015	BILLY COX		0091	MRS. GARFIELD LESTER	
0016	JUDITH MCCOLLAUM		0092	DAN MITCHEM	
0017	RENO L. WALKER		0093	CAROLYN KESKULLA	
0018	KARLA KENAGY		0094	GEORGE BYERS	SF PACIFIC RR CO.
0019	DON FISHER		0095	ANDREW MAIN	
0020	LARRY FISHER		0096	GEORGE GROSSMAN	NM WILDERNESS STUDY COMM.
0021	CINDY WIDENER		0097	JOHN H. PIERPONT	
0022	THOMAS D. LAWSON		0098	JOHN J. KENNEY	SIERRA CLUB
0023	BRENDA KENAGY		0099	NORMA MCCALLAN	SIERRA CLUB
0024	VANCE W. ANGLIN		0100	JUDY BISHOP	NM WILDERNESS COALITION
0025	EDWARD T. HALL	NORTHWESTERN UNIV.	0101	BERTRUM J. HARMON JR.	NM SNOWMOBILE ASSOC.
0026	MILLIE DEAN		0102	WILLIAM FLEMING	
0027	DELLA SPENCE		0103	JEAN FLEMING	
0028	STEVE SPENCE		0104	RUSS LIGON	LIVESTOCK OPERATORS
0029	C. C. BROWN JR.		0105	JIM FISH	NM WILDERNESS COALITION
0030	KATHY WOOD		0106	MIKE CREUSERE	
0031	RAY A. BALLARD		0107	JOANNE MCENTIRE	EARTH FIRST!
0032	ROBIN K. BALLARD		0108	PAUL KREIBIEL	NM WILDERNESS COALITION
0033	TRAVES SMITH		0109	DAN JONES	RIO GRANDE SIERRA CLUB
0034	NICOLE WALKER		0110	CHAMPE GREEN	CTR. OF HOLISTIC RES. MGMT.
0035	LEONA G. BIRD		0111	ROBERT TERRY	NM SNOWMOBILE ASSOC.
0036	COSMO J. FUSCO	OIL INVESTORS LEAGUE	0112	JOHN S. HINGTGEN	
0037	CAROLYN GROSS		0113	CLIFFORD CRAWFORD	
0038	SAMMIE RAYROUX		0114	LIONEL A. ORTEGA	
0039	RANDY VAUGHAN		0115	CHARLES WIGGINS	
0040	VICKY MCCLURE		0116	ROSS COLEMAN	
0041	DONNA CARTER		0117	JIM NORTON	NM WILDERNESS COALITION
0042	THURMAN F. BALLARD		0118	DAVE FARR	
0043	TINA KINCAID		0119	CORRY McDONALD	NM WILDERNESS STUDY COMM.
0044	THOMAS OLIVER		0120	BEN F. SCHABERG	COUGAR FLUORSPAR CORP.
0045	WILLIAM COCHRAN	DOI, BUREAU OF MINES	0121	TOM R. MCKENNA	MCKENNA RANCH
0046	LUTHER CUNNINGHAM		0122	WILLIAM C. PEILA	
0047	SID SAVAGE		0123	ANN PAFF	
0048	SAH-LEAHE BALLARD		0124	MRS. GILBERT WADE	
0049	MIKE CARTER		0125	MRS. RUTH CROWELL	
0050	ROGER VAUGHAN		0126	ROBERT N. MEYER	
0051	ARLAND J. COX		0127	VELVA W. HURT	
0052	KICK PADILLA		0128	WILLIAM L. ALLEN	PACIFIC WESTERN LAND CO.
0053	JIM HYATT		0129	GENE COOK	
0054	BETTY JANE KINCAID		0130	JIM RUSH	
0055	ANTONIO A. SANCHEZ		0131	RAY SCHULTZE	
0056	MITZIE DANIELS		0132	JOSEPH KOLESSAR	PHELPS DODGE CORP.
0057	ESTHER E. FISHER		0133	ROBERT CASIMATI	NM FARM & LIVESTOCK BUREAU
0058	ASA PORTER		0134	MILTON HUGHES	
0059	CHRIS JUDSON		0135	LISA DOYLE	CARLSBAD SPORTSMAN CLUB
0060	G. THEODORE DAVIS		0136	CURTIS DOYAL	
0061	TOMMY VAUGHAN		0137	HELEN BIGELOW	
0062	RUBY JO COX		0138	ROBERT TAFANELLI	NM/BLM WILDERNESS COALITION
0063	ROSEANNA VAUGHAN		0139	STEVE MARLATT	NM WILDERNESS COALITION
0064	RONALD GRIMS		0140	BONNEY HUGHES	
0065	JESSE F. RAYROUX		0141	JOHN V. WHITE	
0066	RAY COX		0142	DANIEL R. KNIGHT	
0067	MRS. ARLAND COX		0143	DOUG C. DAVIS	BUCKHORN RANCH
0068	ANN RAYROUX		0144	SANDRA ANDERSON	
0069	TOM SPROSS		0145		
0070	GEORGE H. GRIFFIN		0146	LLOYD W. KRUMREY JR.	ENERGY & MIN. RES. CONSULT.
0071	JIM LEWIS		0147	LEEDRUE HYATT	
0072	SYDNEY WALTER		0148	BEN ZERBEY	
0073	BEAU JOHNSTON		0149	JIM HUFF	
0074	MRS. KENNETH D. MCCOLLAUM		0150	PATRICK N. SMITH	
0075	JESSICA BAREMORE		0151	TERRY ESKEY	
0076	DIANE JEAN MORGAN		0152	JAMES OWEN	RIO GRANDE SIERRA CLUB

LIST OF THOSE WHO SUBMITTED COMMENT ON
THE REVISED DRAFT EIS
(Continued)

ID NO.	NAME	ORGANIZATION	ID NO.	NAME	ORGANIZATION
0153	SUSAN HARDIE	NATL. ASSOC. SOCIAL WORKERS	0228	NELDA MCDOUGAL	
0154	LEBRON HARDIE		0229	LARRY B. CALHOON	
0155	JOHN W. GREEN	EL PASO COLOR CAMERA CLUB	0230	VIRGINIA MEASDAY	
0156	TOM BRASFIELD		0231	LOREN J. ELLIVEIN	
0157	SANDRA MCKENNA		0232	BETH COX	
0158	TED MERTIG		0233	MARION STACEY	
0159	GARY WILLIAMS	SIERRA CLUB	0234	JOE SMYTH	
0160	KATHERINE MITCHELL		0235	MRS. HENRY BAGBY	
0161	KDATE CLARKE		0236	HAROLD H. BAGBY	
0162	MARTA BALLEEN	BLM WILDERNESS COALITION	0237	RUTH BROWN	
0163	KELLY KIRBY	SIERRA CLUB	0238	JAMES M. STOCKMAN	
0164	M. H. SALMON	GILA CONSERVATION COALITION	0239	ROBBIE JO CRAWFORD	
0165	RICHARD R. WILK		0240	EUNICE D. NUNN	
0166	ALAN P. NELSON		0241	LAVERNE L. BROWN	
0167	JOHN ASHLEY		0242	J.B. SOUTHMULAND	
0168	JACK D. KUCHEL		0243	NADINE SPEIR	
0169	KIMBERLY KUCHEL		0244	KENNETH ROLLOCK	
0170	MRS. M. M. BURKE		0245	ROB KUZMAN	
0171	JACK A. DEMBS		0246	GOLDIE STARK	
0172	JANA OYLER		0247	MARGUERITE BENEDICT	
0173	MRS. L. B. HYATT		0248	SAM STACEY	
0174	MARGARET WHITE		0249	JIM WALSH	
0175	MARK SIMON		0250	GRADY ROBBINS	
0176	ROY VAIL	LAS CRUCES HIGH	0251	MIKE TALBOT	
0177	OLDRICK FENCL		0252	ROY L. ROBBINS	
0178	ROBERT HURLEY	NAVAJO COMMUNITY COLLEGE	0253	MRS. WALTER GREEMAN	
0179	JONATHAN M. TEAGUE		0254	TODD DIXON	
0180	JOSEPH V. CHIALETTI		0255	JESSE U. RICHARDSON	
0181	GEORGE MADER		0256	MRS. GERALD GREEMAN	
0182	LOIS C. HERRMANN	AUDOBON	0257	LITA DIXON	
0183	JOHN W. RUSSELL	LAND MGMT. PLANNING	0258	WALTER GREEMAN	
0184	HENRY S. TAYLOR		0259	ADELIA ROBBINS	
0185	GUY A. ROSSI		0260	OZAR MCDOUGAL	
0186	JACK D. MADDOX	PUBLIC SERVICE CO. OF NM	0261	W. BRENT JACKSON	
0187	FRANK D. THAYER JR.		0262	DAVID BATES	
0188	O. BURTON		0263	BARBARA BRO	
0189	CARL F. J. OVERHAGE		0264	LEONE ANDERSON	
0190	G. EDWARD CORT		0265	SHARON L. COBLE	
0191	CAROL DAVIS HANEMAN		0266	TOMMY E. SHELTON	
0192	EDWARD NURUS JR.		0267	GERALD E. ANDERSON	
0193	CHARLES MCCLURE		0268	TERESA C. McLANE	
0194	BILL FOSTER		0269	J. E. GADSBY	
0195	CAROLYN SMYER		0270	NOLAN PROBST	
0196	ELIZABETH ROORBACH		0271	RODGER SCURLOCK	
0197	JOHN A. SCHROEDER		0272	ERIC S. JOHNSON	
0198	VIRGINIA TOLRIAN		0273	RACHEL DAWSON	
0199	NADINE MOSIE		0274	D. SCHUMANN	
0200	EUDELLA HALLEY		0275	JANE TOKUNAGA	
0201	ELIZABETH ENGEL		0276	PETER S. HEBRON	HEBRON GOURMET PRODUCTS INC.
0202	JOE SMITH		0277	KENNETH CASPER	
0203	DOROTHEA DINES		0278	JOHN K. RUSSELL	
0204	GEORGE W. COX		0279	GEORGE WEISE	
0205	BILLIE SMITH		0280	CLIFFORD L. KRAMER	
0206	PETER SPENCER		0281	BILL RUSSELL	
0207	CHRIS JASSO		0282	WILLIAM M. RUSSELL	
0208	PHOEBE DECHERT	GARDEN CLUB OF AMERICA	0283	JIM STELL	
0209	MARY ALICE MERCER		0284	ARTURO FERRALES	
0210	FERN HURST		0285	EDWARD WHALING	
0211	ELIZABETH HYATT		0286	BOYD STEWART	NM FARM & LIVESTOCK ASSOC.
0212	ANGEL VASQUEZ		0287	GERALD A. STRAUSS	
0213	KENNETH J. EWING		0288	BARBARA J. TROY	
0214	DEE TOLMAN		0289	AUBREY DAVIS	
0215	STEPHEN T. LECUYER		0290	JACK C. GRIFFITH	
0216	STEPHEN C. JAQUA		0291	ROBERT HERRERA	
0217	STEVEN A. KOZCAN		0292	VIRGINIA LOPEZ	
0218	JERI CROSS		0293	ANN WHITLOW	
0219	MOODY CROSS		0294	EUGENE K. WILTON	
0220	MARIE COOK		0295	ROBERTO SUAREZ	
0221	GLORIA M. STAUFFER	GEM & MINERAL SOCIETY	0296	STEVE BROWN	
0222	HERBERT STAUFFER		0297	WOODROW NEAL	
0223	RUSSELL WOOD		0298	SOCORRO LOYA	
0224	EMMA WOOD		0299	ROY GALI	
0225	ROY ROBBINS		0300	MARIA T. HERRERA	
0226	PATRICIA A. RICHARDSON		0301	VICTOR T. LOPEZ	
0227	GRADY L. ROBBINS		0302	URSULA CULP	

LIST OF THOSE WHO SUBMITTED COMMENT ON
THE REVISED DRAFT EIS
(Continued)

ID NO.	NAME	ORGANIZATION	ID NO.	NAME	ORGANIZATION
0303	MARILYN DORSEY		0378	JENNIFER LUSTZARTEN	
0304	JUNE STRAUSS		0379	G. M. HARTMAN	
0305	JEFF HOOD		0380	GEORGE CLARK	
0306	DENNIS DOUGHERTY		0381	TREZ GRANT	
0307	JOSEPH SAWYERS		0382	G. R. QUESENBERRY	
0308	FRANK PRESCOTT		0383	MRS. G. R. QUESENBERRY	
0309	KARA BAILEY		0384	ROSS MAY	
0310	ZELDA CARR		0385	JACK LAUGHLIN	
0311	JOSEPH IKARD		0386	HUGH MURPHEY	
0312	JEFF ISAACKS		0387	M. C. KRAUS	
0313	YOLANDA GUFFER		0388	CHARLES POLING	
0314	JAMES BASSETT		0389	WILLIAM WEED	
0315	DEAN WIGGANT		0390	ERNEST RIGGS	
0316	JOHN MCKIBBEN		0391	HERMINIO GONZALEZ	
0317	PATRICK KANE		0392	SID FLEMING	
0318	G. A. LAMY		0393	LISA TELLES	
0319	STEVE J. ISSACKS		0394	D. G. GOMEZ	
0320	M. B. BROOKS		0395	CHARLES JENNINGS	
0321	ORERLLE W. HINKLE		0396	CHARLES WIDGER	
0322	RICHARD PACK		0397	ANGIE TAYLOR	
0323	LARRY FOSTER	CORRALITOS VENTURE	0398	NOPPY SAMANIGO	
0324	ELDON PICKETT		0399	LONNIE FEAGENN	
0325	STEVE GRIFFITH		0400	DAN PROVENCIO	
0326	CHRISTINE GRIFFITH		0401	BILL YOUNGREN	
0327	ALVIN BOWDEN		0402	PATRICIA KRYNITZ	
0328	LAURA FERGUSON		0403	BURFORD MILLER	
0329	WILLIAM FRALEY		0404	CHAP PAULSON	
0330	GLENN LILE		0405	TROY DUTTON	
0331	RICHARD MANASCO		0406	G. D. GLASS	
0332	LEE SHORES		0407	NORMAN FISHER	
0333	DALE SANDER		0408	TOM LEACH	
0334	JAMES CALHOUN		0409	ROY KRYNITZ	
0335	FRANK BILLINGS		0410	JERRY HILL	
0336	BILL YOUNGER		0411	MAX JOHNSON	
0337	JENNIFER BURNS		0412	KAREN ALAZAR	
0338	W. B. KIRKPATRICK		0413	LESTER FISHER	
0339	BILLY HOLBROCK		0414	ZEKE SALAZAR	
0340	LANE THOMPSON		0415	CARL FAUBION	
0341	PABLO REDE		0416	PAULINE NEAL	
0342	C. O. HALE		0417	BOBBY SMIKOVSKY	
0343	VICTOR PACHECO		0418	MARGERET WALKER	
0344	PRICE PATCHELL		0419	EDWARD TARIN	
0345	RY KIDD		0420	SHARON GAMBON	
0346	MIKE HULBERT		0421	ARTHUR PRITCHETT	
0347	SANDRA WEED		0422	GLORIA FERNANDEZ	
0348	NANCY SCHELL		0423	JACK HANCOCK	
0349	LORA KRYNITZ		0424	TOM BARTEE	
0350	RAYMOND JOHNSON		0425	CINDY LOPEZ	
0351	R. A. DURIO		0426	C. H. CADENHEAD	
0352	VERNON WOOD		0427	NOLAN BELL	
0353	JIM LUCKINS		0428	M. W. ALLMAN	
0354	ANTHONY POPP		0429	JACKIE BOSWORTH	
0355	BARRY KRYNITZ		0430	JACK ALFORD	
0356	ALAN TAYLOR		0431	CHARLES OLIVER	
0357	MICHAEL JONES		0432	ROBERT ASH	
0358	R. BOTSCHEN		0433	ROBERT BAILEY	
0359	BILLIE BURLISON		0434	ROBERT CARR	
0360	J. O. MARTIN		0435	CLARENCE BLIBO	
0361	DALE HILL		0436	LANA SUE COPELAND	
0362	H. A. AGUAUJE		0437	PETE ROYBAL	
0363	VIRGEL RIDDLE		0438	FLOYD FOWLER	
0364	MIKE HALL		0439	BOYD WELCH	
0365	TRUDY LEMING		0440	T. RICHARD THARP	
0366	ROY B. GILLILAND		0441	WILFORD COTHERN	
0367	JOYCE ALLEN		0442	BALTAZAR PENA JR.	
0368	SHIRLEY HALL		0443	GORDON CORY	
0369	DELLOYD HAYNER		0444	LOUIS PEL	
0370	LEMEY FISHER		0445	ERNEST SHORT	
0371	BILL TROY		0446	DON SAWYERS	
0372	R. L. GRAY		0447	SCOTT CARPENTER	
0373	HELEN SCHELL		0448	DEBORAH NEVAREZ	
0374	J. T. SMITH		0449	L. R. GILMER	
0375	LEROY PRITCHETT		0450	LOUISE WITT	
0376	ALDEN TOMLAUGH		0451	LERRY GONZALES	
0377	GERALDINE CARTER		0452	A. B. HIGGINS	

LIST OF THOSE WHO SUBMITTED COMMENT ON
THE REVISED DRAFT EIS
(Continued)

ID NO.	NAME	ORGANIZATION	ID NO.	NAME	ORGANIZATION
0453	MARY YOUNGREN		0529	PETER MOCHO	NM CATTLEGROWERS ASSOC.
0454	FRANCES TATE		0530	WILLIAM BRANDENBURG	
0455	JAMES FRANZOY		0531	BRAD LAGORIO	
0456	WILLARD DEERMAN JR.		0532	RICHARD ADAM	
0457	NEVA CARR		0533	R. W. KIRSCHNER	
0458	BILL MONTGOMERY		0534	H. D. FRANKEL	
0459	M. Y. FOIT		0535	S. B. WHITTENBURG	
0460	KAY RHUMATE		0536	DAVID WITT	
0461	KATHRYN AGUAYO		0537	ZANA MOORE	
0462	A. Y. GILLIAN		0538	SHARON LITHERLAND	
0463	IRVIN WADZIN		0539	MERRILL ELIRMANTRAUT	
0464	JIM CANDLER		0540	SHEILA GERSHEN	
0465	HAROLD MACAW		0541	THOMAS W. MERLAN	NM HISTORIC PRESERV. DIV.
0466	JEFFREY ISAACKS		0542	JOHN WHITE	
0467	STANLEY MILLER		0543	THOMAS MORGAN	
0468	ROBERT BRONSON		0544	J. RUSCIOLELLI	
0469	JOHN BOWMAN		0545	DAVID STUPIN	
0470	JAY ARNOLD		0546	QUAN HA	SAN BERNADINO SCHOOL DIST.
0471	RICHARD RHOADES	PHELPS DODGE CORP.	0547	JEANNE DAVIDSON	
0472	EVELYN MELACK		0548	JIM DAVIDSON	
0473	ALAN LAWSON		0549	BEN NEARY	
0474	NIKKI MCDONALD		0550	CATHY KINZER	
0475	CARL GEORGE		0551	MARGUERITE BROWN	
0476	C. A. BRYANT		0552	GEORGE BLINN	
0477	MARGARET MORSE		0553	CHARLES DIXON	
0478	L. BLAKE EMERSON		0554	ERNIE MCGOVERN	
0479	DAVID PENGELLEY		0555	RHODA RILEY	
0480	JACQUELINE MARET		0556	HENRY WRIGHT	WEMINUCHE GROUP-SIERRA
0481	DAVID RICH		0557	JOSEPH MORNINI	
0482	RICHARD WILSON		0558	KENNETH STEVENS	
0483	TOM SUK		0559	DARBY BIXLER	
0484	CONSTANCE RYNDERS		0560	HULON BRIGHT	
0485	S. D. SCHERMUTZ		0561	WAYNE EDMISTON	
0486	LYNDA GAIN		0562	JAN CUMMINGS	
0487	JULIE WINKLER		0563	R. L. MARSHALL	
0488	MARY LOU WALLACE		0564	CHARLES WATSON JR.	NV OUTDOOR REC. ASSOC. INC.
0489	ROXANNE GUNTER		0565	WALTER GERSTLE	
0490	BOB GERL		0566	VERA GEORGE	
0491	ROGER PARSONS		0567	VIC MARSHALL	
0492	KATHY KILMER		0568	GARY PETERSON	
0493	BRIAN SUDERMAN		0569	WALTER GRAF	
0494	LORRAINE SCHULTE		0570	BEVERLY ELIRMANTRAUT	
0495	RAND GREENFIELD		0571	ROLAND MAGBY	
0496	DAVID HENNINGER		0572	PETER MARTIN	
0497	DANIEL MOORE		0573	DOROTHY MAGBY	
0498	PAT PENFIELD		0574	DONALD SKINNER	
0499	WILLIAM INGALLS		0575	DONALD MCCORMICK	
0500	ROBERT MUELLER		0576	MICHAEL REX	
0501	STEVEN CARY		0577	RICHARD MCCURDY	
0502	SY BALDWIN		0578	JANET PEACOCK	
0503	WALTER HERRIMAN		0579	STEVE VERCHINSKI	
0504	HELEN BARBER		0580	RUTH FARLEY	
0505	JOHN UPTON		0581	MRS. ROBERT COSIMATI	COSIMATI FARMS
0506	WALTER PELECH		0582	LARRY LA MORSE	
0507	DAVID RICHMAN		0583	SUSAN LARSER	
0508	CATHY WYNN		0584	ELISE UNTEMYER	
0509	ROXANNE PACHECO		0585	RICHARD KOPEL	
0510	BILL CURLESS		0586	RAE MOELLER	
0511	THOMAS W. MERLAN		0587	CHRISTINA ALLEN	
0512	PAUL HUGHES		0588	KEVIN O'BRIEN	
0513	JOE MCGLOIN		0589	ROBERT SHAW	
0514	JOHN SWANSON		0590	ERNEST GLADNEY	
0515	VICTOR GARCIA	NM TRAPPER ASSOC.	0591	MELVIN BARLOW	
0516	NEIL SNOW		0592	MICHAEL STANFORD	
0517	MARK SHEPARD		0593	MARI HOFF-NELSON	
0518	ELEANOR WOUTTEN		0594	STEVE BUDEK	
0519	MATTHEW HAUN		0595	CATHERINE CINE	
0520	ALBERT KELLEY	SERRANO SCHOOL	0596	GARY LOOS	NM CACTUS/SUCCULENT SOCIETY
0521	SARAH STRONG		0597	BRUCE HAYWARD	NM NAT. HISTORY INSTITUTE
0522	G. E. HAMBERG		0598	FRANCES SANCHEZ	
0523	PHOEBE SUMNER		0599	RODNEY GREENO	
0524	HAROLD DITIMER		0600	ELLEN NADEL	
0525	J. H. HANLEY		0601	RICHARD DIVER	
0526	DAVID MITCHELL		0602	STEVEN FLINT	
0527	ELIZABETH KING		0603	CHERYL SEATON	
0528	WILLIAM STEPHENS	NM DEPT. OF AGRICULTURE	0604	BERNICE QUINN	

LIST OF THOSE WHO SUBMITTED COMMENT ON
THE REVISED DRAFT EIS
(Concluded)

ID NO.	NAME	ORGANIZATION	ID NO.	NAME	ORGANIZATION
0605	JANE DIGGS		0679	MARK MORTIER	STATE OF NM
0606	JAMES WITT		0680	TONEY ANAYA, GOVERNOR	NAT. RESOURCES DEPT.
0607	DE WITT DAVIDSON		0681	LEO GRIEGO	NAT. RESOURCES DEPT.
0608	STEVEN WONDZELL	NM STATE UNIV.	0682	KAY HATTON	ENERGY & MINERALS DEPT.
0609	DOMINIQUE BACHELET	NM STATE UNIV.	0683	BILL HATCHELL	ENERGY & MINERALS DEPT.
0610	CARL POPP		0684	JAY GROSECLOSE	NM INTERSTATE STREAM COMM.
0611	JAMES JONES		0685	HAROLD OLSON	NM DEPT. OF GAME AND FISH
0612	LOIS RUSH		0686	DENISE FORT	ENVIR. IMPROVEMENT DIV.
0613	ERNIE SMITH		0687	DONALD PURINTON	
0614	CURTIS SMITH		0688	VERNON LeFEBRE	
0615	EDITH LANDGRADE		0689	HUGH DAUGHER	
0616	THOMAS MCBRIDE		0690	MARY PARKER	
0617	MICHAEL HOUGH		0691	W. J. KIRSCHI	DOI, BUREAU OF RECLAMATION
0618	BARBARA HOUGH		0692	JAMES BAKER	PUBLIC LANDS COMMITTEE
0619	MOLLY GONZALES		0693	LYN DIMET	
0620	TONI LOPEZ		0694	ESTEBAN MULDAVIN	
0621	C. E. TAVERNER		0695	FREDERICK BENDER	
0622	ERVIN SCHILDER		0696	WILL SWEARINGHAM	
0623	RUTH WEIKER		0697	ROGER PETERSON	NM WILDERNESS STUDY COMM.
0624	CLAIRE SCHILDER		0698	FRANCES RIC	
0625	FLORENCE FLADHAMMER		0699	ALLEN LERNER	
0626	HELEN WILLIAMS		0700	MIKE OSBORN	
0627	ELTON WILLIAMS		0701	DAVID MORRISON	
0628	HOWARD JONES		0702	LOHNA FULLERTON	
0629	NELSON JORDAN		0703	DAVID McCLURG	CARLSBAD CITIZENS FOR RESPONSIBLE LAND MGMT.
0630	EMMY GROVER				
0631	SHERRY BARNCASTLE		0704	ARTHUR LOY	
0632	GARLAND HARRIS		0705	JOE STELL	
0633	ADRIEN DOCTER		0706	GARY GARWOOD	
0634	GENA TROTT		0707	K. KISER	
0635	MARY THOMAS		0708	PEE WEE SWITZER	LIVESTOCK INSPECTOR
0636	JOHN WRIGHT		0709	SHANNON COOLEY	
0637	LONNIE FREDMAN		0710	DAVID HENDERSON	R. DAVEY AUDOBON CENTER
0638	H. BRUCE BELL		0711	JACK RASSI	SALT RIVER PROJECT
0639	JULIE CATON		0712	RICHARD ANDERSON	
0640	THOMAS BRASFIELD	EL PASO WILD. PRES. COMM.	0713	JAMES THAYER III	
0641	PAULA SEATON		0714	MARY PERKINS	
0642	NANCY MANDEL		0715	SHIRLEY PUTNAM	UNM SCHOOL OF MEDICINE
0643	DANNY WATSON		0716	ELLIOT BERNSHAW	
0644	MARGARET CASSIDY		0717	J. L. GRAHAM	
0645	PATRICIA PILCHER		0718	MENKIT PRINCE	
0646	GEORGE CURRY		0719	L. MANNING	
0647	SAM MELENDEZ		0720	CHARLOTTE SPADER	
0648	GENE SALES		0721	SANTOR WILLIAMS	
0649	GARY STEELE		0722	DAVE MILLER	
0650	LARRY FLORES		0723	RA PAULETTE	
0651	STEPHEN BRIMLY		0724	EDDIE VIGIL	
0652	JOHN RODRIGUEZ		0725	PATRICK CRANE	
0653	ALBERT HOWELL		0726	ALYCE SEATON	
0654	MYRTIS SHEPARD		0727	LINDA DUTCHER	
0655	FRANKLIN HULTO		0728	DAVID CLAWSON	
0656	THEODORE HODOBA	NATIVE PLANT SOCIETY OF NM	0729	HANK SAKS	TAOS ENVIRONMENTAL ASSOC.
0657	MILO CONRAD	NM WILDERNESS STUDY COMM.	0730	RAY STEVENS	
0658	BETTY HYATT	QUEST REALTY	0731	THOMAS SISKI	
0659	HEISTER DRUM		0732	SARAH SISK	
0660	MARCUS COHEN		0733	TOM MCLAUGHLIN	
0661	ELAINE COHEN		0734	RAMONA GUALT	
0662	NEIL ALLEN	AMOCO PRODUCTION CO.	0735	WILLIAM McILHANEY	NM FARM & LIVESTOCK BUREAU
0663	ARNOLD KESKULLA		0736	JOHN BUCHSER	
0664	LORRAYNE BYERS		0737	DOROTHY AMUNDSEN	
0665	DENA RANDLE		0738	HOWARD AMUNDSEN	
0666	JANE TERRALL		0739	CANDACE KROFT	
0667	JOE SWITZER		0740	DOUGLAS FARIS	NATIONAL PARK SERVICE
0668	NINA SWITZER		0741	FRANCES PHILLIPS	U.S. ENVIR. PROTECT. AGENCY
0669	MARIAN MILLER	SANTA FE GARDEN CLUB	0742	MIKE IRWIN	
0670	JAMES SMITH		0743	WANDA ZIMMERMAN	
0671	JOHN WHITE		0744	LESLIE OREAR JR.	
0672	MARY GAUGHAN		0745	KIETH STREVER	
0673	JOANNE HARDESTY		0746	SUSAN NICHOLSON	
0674	CELIA LINDBLOM		0747	JAMES POSS	
0675	JOHN SPROUL	EL PASO/PECOS AUDOBON SOC.	0748	CLIFTON MERRITT	AMERICAN WILD. ALLIANCE
0676	GARY RECH		0749	HELEN HILLEGASS	CORDOVA RANCH
0677	JOHN PICARO		0750	S. THUNBORG	
0678	PHILIP THATCHER		0751	JOAN KELLEY-PORTNOY	SANGRE DE CRISTO ANIMAL PROTECTION INC.

United States Department of Justice
Bureau of Indian Affairs
Washington, D.C. 20540

COMMENT LETTERS FROM FEDERAL, STATE, AND
LOCAL GOVERNMENTS AND INDIAN TRIBES AND RESPONSES
TO SUBSTANTIVE COMMENTS



United States Department of the Interior

BUREAU OF MINES

0045

P. O. BOX 25086
BUILDING 20, DENVER FEDERAL CENTER
DENVER, COLORADO 80225
Intermountain Field Operations Center

October 9, 1986

Memorandum

To: State Director, NM (912), Bureau of Land Management, New Mexico
State Office, P.O. Box 1449, Santa Fe, New Mexico 87504-1449

From: Chief, Intermountain Field Operations Center

Subject: Review of Revised Draft Environmental Impact Statement (EIS) for
the New Mexico Statewide Wilderness Study

Bureau of Mines personnel have reviewed the subject document as you requested. The purpose of the Bureau of Land Management (BLM) study is to determine the suitability or unsuitability of 46 individual wilderness study areas (WSA's) for inclusion in the National Wilderness Preservation System. WSA's are scattered throughout New Mexico and cover about 943,356 acres of public land. The proposed action recommends all or part of 28 WSA's along with some non-WSA public land, totaling 560,328 acres as suitable for wilderness designation, and 386,359 acres as unsuitable.

The Bureau of Mines' mission is to help insure the United States of an adequate and dependable supply of minerals to meet its defense and economic needs. In that regard, we are concerned that large areas favorable for minerals (many of them critical or strategic minerals) are being withdrawn permanently from exploration and development; the Organ Mountains, Big Hatchet Mountains, Ojito, and Sierra Ladrones WSA's, along with some potential oil and gas areas are examples of possible mineral-producing areas that would be closed to future mineral activity.

The revised draft environmental impact statement provides an in-depth analysis of known information concerning mineral resources in the study area, but we believe that conclusions on mineral favorability are premature and should not be finalized until the Bureau of Mines (USBM) and the U.S. Geological Survey (USGS) have completed the studies of the WSA's as required by the Federal Land Policy and Management Act of 1976 (PL 94-59). Other geological studies, now being made by other agencies, may also be available at that time. Accordingly, we suggest that the final statement for this document await such time as the USBM and the USGS have finalized and published results of their investigations. The findings of these two agencies would allow for a more thorough analysis of the mineral status of each area.

William Cochran
William Cochran

RESPONSE TO 0045-1

Following the Final EIS, the BLM will prepare Wilderness Study Reports which will incorporate the results of the USBM and USGS studies. This updated mineral information could result in a rewrite of the BLM recommendations; however, this is considered unlikely.



United States
Department of
Agriculture

Forest
Service

Southwestern
Region

517 Gold Avenue SW.
Albuquerque, NM 87102

Reply To: 1950

0183

Date: NOV 4 1986

Joe Sovick
EIS Team Leader
Bureau of Land Management
New Mexico State Office
P.O. Box 1449
Santa Fe, NM 87501-1449

Dear Mr. Sovick:

Our office has reviewed the RDEIS for your New Mexico Wilderness Study.

We did not identify any areas where your plans would be in conflict with
our ability to meet our land management mission.

Sincerely,

JOHN W. RUSSELL
Director of Land
Management Planning
Southwestern Region





United States Department of the Interior

0691

BUREAU OF RECLAMATION
UPPER COLORADO REGIONAL OFFICE
P.O. BOX 11568
SALT LAKE CITY, UTAH 84147

IN REPLY
REFER TO UC-151

DEC 10 1986

Memorandum

To: State Director, Bureau of Land Management, New Mexico State Office,
P.O. Box 1449, Santa Fe, New Mexico 87504-1449

From: **ACTING** Regional Director
Bureau of Reclamation

Subject: Review of Revised Draft Environmental Impact Statement for the
New Mexico Statewide Wilderness Study

We have reviewed the subject document and have no comments. The proposed action would not significantly effect any existing projects and is not in conflict with any proposed project.

cc: Commissioner
Attention: 150

Mr. Robert F. Stewart
Regional Environmental Officer
Denver Federal Center
P.O. Box 25007
Denver, Colorado 80225



United States Department of the Interior

NATIONAL PARK SERVICE

SOUTHWEST REGION

P.O. Box 728

Santa Fe, New Mexico 87501

0740

IN REPLY REFER TO

L7619(SWR-PE)

DEC 12 1986

Memorandum

To: State Director, Bureau of Land Management, Santa Fe, New Mexico

From: Associate Regional Director, Planning and Cultural Resources,
Southwest Region

Subject: Review of Bureau of Land Management Revised Draft Environmental
Impact Statement for the New Mexico Statewide Wilderness Study
(DES 86/0036)

We have reviewed the subject documents and have the following comments.

We support the "Amended Boundary" alternative for the Brokeoff Mountains Wilderness Study Area (WSA) (NM-030-112) as described in Appendix 42. We also recommend that the acquisition of the 1,920 acres of state land within the reduced unit is critical if the area is to be effectively protected by the Bureau of Land Management (BLM), and if this unit, and the established wilderness within Guadalupe Mountains National Park, Texas, are to be afforded the benefit of having contiguous boundaries.

We strongly recommend that the Amended Boundary Alternative be selected for the Mudgetts WSA (NM-060-819/819A).

In 1984, the National Park Service (NPS) was asked by Congressman Seiberling to prepare its own resource assessments as to the desirability of adding the Mudgetts WSA to Carlsbad Caverns National Park. Our decision at that time was to recommend that this area need not be added to the national park. However, this decision is no way inferred that the area was unsuitable for wilderness designation by the BLM or that the area did not deserve maximum protection. In fact, our recommendation not to add the Mudgetts area to the park was based largely on our belief that the BLM would be able to provide maximum protection to this unit and that the park would be mutually benefitted by this protection.

The NPS has in the past expressed concern to the BLM about the continuous encroachment of oil and gas drilling operations into the viewsheds of Carlsbad Caverns National Park. The area immediately surrounding the Mudgetts WSA has been the subject of past cooperative efforts by the BLM and NPS in

0740-1

0740-1 (cont.)

attempting to mitigate the effects of visual and aesthetic impacts resulting from drilling rigs being placed on the horizon line as viewed by park visitors standing at ground level, and those using the observation deck at the park's visitor center. We feel that the three existing leases encompassing Sections 20, 21, 22, 23, and 24 (T24S, R24E) of the WSA represent a significant threat to these same resources and would request further cooperation from the BLM in mitigating the effects of these additional wells.

0740-2

The Dark Canyon Special Management Area, Area of Critical Environmental Concern (ACEC), identified in the Carlsbad Resource Area Draft Resource Management Plan and Environmental Impact Statement, identifies the Mudgetts WSA portion of the ACEC only as a type "2" Management Zone. This designation has no real capacity to protect the area from further impacts from oil and gas development. In fact, even Zone 1 designation for the ACEC offers no real capacity for BLM to protect the WSA from existing leases since two of these leases are identified as being "held by production." This leaves the NPS with the option of simply living with the potential impacts of these wells or doing what it reasonably can to attempt to prevent this impact. Since the pre-FLPMA oil and gas leases in the WSA are valid in spite of wilderness designation and post-FLPMA leases can be constrained by "no surface disturbance" caveats under wilderness designation, we recommend the Amended Boundary alternative as identified above.

We have expressed these same recommendations in our response to the BLM's Carlsbad Resource Area Draft Environmental Impact Statement currently undergoing public review.

The Lonesome Ridge WSA (NM-060-801) exists as the approximate center for the Capitan Reef formation and is an important link in efforts to preserve the reef complex as an entire geologic entity. We feel that wilderness designation by the various Federal agencies administering their respective portions of the reef would be a significant contribution towards limiting the environmental impacts of oil and gas development and possible mineral extraction activities.

In light of the U. S. Forest Service's (USFS) decision not to recommend their Guadalupe Escarpment WSA for wilderness designation, or even designate the area as a Special Geologic Area, we urge the BLM to reconsider its agreement with the USFS to tie the Lonesome Ridge WSA (NM-060-801) recommendation to the Guadalupe Escarpment decision. It is our feeling that the Lonesome Ridge WSA exists as one of the outstanding scenic areas in the state and certainly deserves a recommendation by the BLM for wilderness designation. We suggest that the juxtaposition of the Lonesome Ridge WSA with the established wilderness within Guadalupe Mountains National Park would qualify this unit for wilderness status even though it falls below the minimum 5,000-acre criteria normally associated with wilderness lands.

Otherwise, we generally find the statement to be well written and reflects the hard work and professionalism of the BLM staff. We wish the BLM well in their efforts to manage and protect our public lands.

Al Douglas Jarvis

RESPONSE TO 0740-1

This comment is directed to a specific WSA which is addressed in the Wilderness Analysis Report for the Mudgetts WSA in Volume 4.

RESPONSE TO 0740-2

This comment is directed to a specific WSA which is addressed in the Wilderness Analysis Report for the Mudgetts WSA in Volume 4.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
1201 ELM STREET
DALLAS, TEXAS 75270

0741

DEC. 12 1980

Mr. Monte Jordon
Acting New Mexico State Director
U.S. Department of the Interior, BLM
P.O. Box 1449
Santa Fe, New Mexico 87504-1449

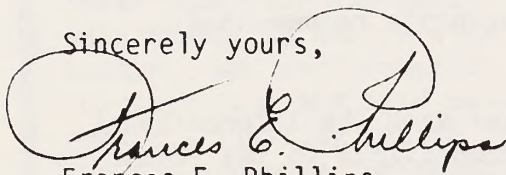
Dear Mr. Jordon:

The Environmental Protection Agency has completed its review of your Revised Draft Environmental Impact Statement (EIS) for the New Mexico Statewide Wilderness Study. Implementing the proposed action will provide long-term maintenance of wilderness values in the areas recommended and identified as suitable for wilderness designation. In those areas recommended as suitable, mineral exploration and development would not be allowed.

We classify your Revised Draft EIS as Lack of Objections (LO). Generally, we have no objections to the proposed action as discussed in the EIS. Our classification will be published in the Federal Register according to our responsibility to inform the public of our views on proposed Federal actions, under Section 309 of the Clean Air Act.

We appreciate the opportunity to review your Revised Draft EIS. Please send our office one (1) copy of the Final EIS at the same time it is sent to the Office of Federal Activities, U.S. Environmental Protection Agency, Washington, D.C.

Sincerely yours,


Frances E. Phillips
Acting Regional Administrator



OFFICE OF THE DIRECTOR/SECRETARY
Box 3189/Las Cruces, New Mexico 88003
Telephone (505) 646-3007

November 21, 1986

03.40 deis/nmsws

Mr. Larry Woodard, State Director
NM(912)
Bureau of Land Management
New Mexico State Office
P.O. Box 1449
Santa Fe, New Mexico 87504-1449

Dear Mr. Woodard:

This letter is to serve as official comments on the Revised Draft Environmental Impact Statement/New Mexico Statewide Wilderness Study (DEIS/NMSWS). The suitability or non-suitability of specific Wilderness Study Areas (WSAs) for wilderness designation is not the principal concern of these comments. Rather, the following observations concentrate on the adequacy of the DEIS/NMSWS in addressing the pertinent environmental issues and impacts of wilderness designation and management.

Management Costs of Wilderness Designation

Analysis of the management costs resulting from wilderness designation is omitted from the DEIS/NMSWS on the assumption the "BLM will have adequate funds and personnel to manage areas designated wilderness" (DEIS/NMSWS, Vol. I, p. 4-1). Legislative designation will, indeed, obligate Congress to provide funds for the management and protection of newly created wilderness areas. In our opinion, however, this does not relieve the Bureau of Land Management (BLM) of the obligation to provide a full accounting of costs anticipated in the implementation and long-term continuation of that agency's recommended wilderness plan.

The DEIS/NMSWS will provide the Secretary of Interior with the informational base necessary for making required wilderness recommendations to the President of the United States (Federal Land Policy and Management Act [FLPMA], Sec. 603.{a}). The President, in turn, will submit these wilderness recommendations (or a revision of them) to the U.S. Congress for subsequent approval. Unless accurate and detailed accounts of anticipated implementation and future management costs are included in the DEIS/NMSWS, neither the President nor the Congress can be expected to make fiscally responsible recommendations for and designations of wilderness. Although the BLM may not consider taxpayer dollars to be a limiting factor in wilderness management, the President, the Congress, and the American taxpayer most certainly do.

Accordingly, we request the DEIS/NMSWS be revised to include estimates and evaluations of all pertinent costs associated with implementation and future management of the BLM's proposed wilderness plan. Specifically, we request an accounting of the projected costs of acquiring 11,002 acres of private surface lands and 26,433 acres of nonfederal, subsurface mineral estate as proposed in the DEIS/NMSWS. Also, we ask the BLM to provide an economic breakdown of the annual costs of land management on a per acre basis for each of the WSAs recommended for wilderness designation. This analysis should include a short-term projection of all management and personnel costs anticipated for each WSA under wilderness designation. It should also include, for comparative purposes, total per acre management costs incurred annually for each WSA during their interim management as WSAs and during the five years prior to their designation as such.

Despite BLM's assumptions, we believe it is imperative that economic considerations be included in any definitive environmental analysis and assessment of future wilderness designations in New Mexico. The issue at hand is not merely the magnitude of costs associated with creating and managing new wilderness areas; it is also the environmental impact those costs may have on future management of the majority of BLM lands which will not be designated wilderness.

The annual operating budget for the BLM in recent years has failed to keep pace with the escalating costs of BLM's management of renewable resources. Under current federal fiscal constraints, annual BLM budgets in the immediate future cannot realistically be expected to increase significantly. In light of static or diminishing budgets and a conspicuous federal fiscal crisis, we are concerned the often more expensive management needs of wilderness areas could entail reductions in available funds and manpower for the management of nonwilderness lands. Since these nonwilderness lands constitute the bulk of public domain lands managed by the BLM, we believe it is imperative the BLM prepare a worst-case environmental analysis of the potential impact of wilderness management costs on the stewardship and environmental well-being of these nonwilderness lands. Specifically, the BLM should provide in a revised DEIS/NMSWS, an analysis of projected wilderness management costs and the economic and environmental impact of those expenditures on each of the several nonwilderness BLM land management programs in New Mexico. Funding is and will remain a limiting factor in future BLM activities. Therefore, it is essential the BLM evaluate foreseeable environmental impacts on nonwilderness lands resulting from unavoidable transfers of personnel and funds from existing land management programs to those specific to wilderness areas.

Evaluation of Resource Impacts Under Wilderness and No-Wilderness Designation: Constraints of the Federal Land Policy and Management Act (FLPMA).

The National Wilderness Preservation System was created to provide for the protection and preservation of wilderness areas (Wilderness Act, 1964). The BLM has stated throughout the DEIS/NMSWS that wilderness designation would provide a level of protection and preservation to resources not afforded by alternative designations. Although we recognize wilderness designation can be a powerful tool for ensuring preservation of selected areas, we do not agree

with BLM's contention (repeated throughout the DEIS/NMSWS) that without wilderness designation, specific WSA's **must** inevitably suffer disruption or destruction of wildlife habitat, deterioration of cultural resources, and degradation of vegetation and soils.

In the absence of wilderness designation, all BLM lands and accompanying resources are protected under the mandate of FLPMA. According to the act, public lands are to be "...managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resources, and archeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy and use" (FLPMA, Sec. 102 {a}{8}).

We interpret this section of FLPMA to mean the BLM is mandated to manage all land and air resources within its jurisdiction (regardless of designation) in a manner nondegrading to the environment and its component parts. Despite this clear mandate, the BLM makes it strikingly clear throughout the DEIS/NMSWS that unless wilderness designation is granted to any particular WSA, the land and resources of that WSA will deteriorate and, in some cases, be destroyed.

Several examples illustrate the inconsistency between FLPMA's conservation mandate and BLM's conservation position in the DEIS/NMSWS.

1. Petaca Pinta WSA--"In the long term [the no-wilderness alternative would result in] . . . disruption of wildlife habitat, the deterioration of visual values, cultural resources, vegetation, and soils" (DEIS/NMSWS, p. 11-34).
2. Ignacio Chavez and Chamisa WSA's--"Over the long term [the no-wilderness alternative would] . . . disrupt productive wildlife habitat, deteriorate visual values, cultural resources, and vegetation" (DEIS/NMSWS, p. 6/7-10).
3. Empedrado WSA--"In the long term [the no-wilderness alternative] . . . would be expected to impact all game and non-game species and diminish the existing wildlife population. Overall, the impact on wildlife under this alternative could be significant because of the extensive ecosystem modifications [e.g., soil erosion and vegetation destruction due to motorized activity]". (DEIS/NMSWS, p. 5-40).
4. La Lena WSA--"In the long term [the no-wilderness alternative would] . . . threaten very erodible soils and vegetation, including 2 rare plant species, **destroy** [our emphasis] habitat for game and non-game

species, disrupt nesting season for raptors, scaled quail, and non-game birds, possibly to the point of nest abandonment, degrade abundant cultural resources . . . " (DEIS/NMSWS, p. 8-6).

5. Ojito WSA--"In the long term [under the no-wilderness alternative] . . . impacts to wildlife under this alternative would be significant because of the extensive ecosystem modification [resulting from off-road vehicle activity, mineral exploration, and firewood cutting]" (DEIS/NMSWS, p. 10-44).
6. Rimrock WSA--"In the long term [under the no-wilderness alternative] . . . increased motorized activity would have a primary impact on the WSA's vegetation and a wide variety of wildlife species" (DEIS/NMSWS, p. 12-42).
7. Sand Canyon, Little Rimrock, and Pinyon WSA's--"In the long term [the no-wilderness alternative would] . . . threaten fragile soils . . . , disturb nesting seasons for raptors and other species, possibly to the point of nest abandonment, **destroy** [our emphasis] habitat for game and non-game wildlife . . . , degrade paleontological resources . . . " (DEIS/NMSWS, p. 13/14/15-7).

These several WSAs exemplify a theme which is repeated throughout the DEIS/NMSWS: without wilderness designation, natural resources in WSA's will deteriorate or, in fact, be destroyed. We cannot accept, however, resource degradation as the only alternative to wilderness designation. FLPMA is clear in its mandate to the BLM. Land management must be done in a manner nondegrading to the environment and its component resources. The BLM's stated position that resource degradation is possible if not inevitable without wilderness designation suggests the BLM may not be performing its legally mandated function.

Certainly, multiple-use is the strategy under which nonwilderness lands would necessarily continue to be managed. However, we do not believe multiple-use entails, or should entail, destruction of the very natural resources which BLM is mandated to steward. As the DEIS/NMSWS is now presented, the BLM is advocating a form of multiple-use which is incompatible with wise resource management and prudent resource conservation.

Accordingly, we believe the BLM has no reasonable choice other than to reevaluate the environmental impacts of no-wilderness designation on WSA's in light of the mandated conservation provision of FLPMA--e.g., nondegradation of the environment and its component resources. In our opinion, the current analysis of the environmental impacts of no-wilderness designation is totally unsatisfactory. We also believe the poor quality of this analysis invalidates the utility of the DEIS/NMSWS. Without accurate evaluation of the environmental impacts of wilderness and no-wilderness designations, the BLM will have failed in its duty to provide objective and thorough wilderness recommendations to the President, the Congress, and the American people.

Alternative Designations: Areas of Critical Environmental Concern (ACEC)

Many of the WSA's described in the DEIS/NMSWS are currently managed under the guidelines of one or more special (nonwilderness) management designations. However, the BLM makes it clear such designations cannot ensure long-term resource protection.

The Cowboy Springs WSA is currently designated and managed as a Research Natural Area (RNA). Nevertheless, the BLM states "In the long-term, administrative protection (RNA) is not expected to adequately protect wilderness values, resulting in degradation of the entire area's wilderness character" (DEIS/NMSWS, p. 34-26). Similarly, the BLM claims that without wilderness designation, the Special Management Area (SMA) designation and management of the Cabezon WSA would not appreciably halt long-term resource deterioration in that area (DEIS/NMSWS, p. 4-40).

We have already commented that FLPMA is clear in its resource conservation mandate. Agencies such as the BLM must manage the public lands in a manner nondestructive of the resources delegated to their stewardship. We believe this mandate is sufficient in spirit and content to allow implementation of environmentally meaningful and ecologically sound alternatives to wilderness designation.

Unfortunately, the BLM entertains only two effective management alternatives in the DEIS/NMSWS: designation as wilderness or nondesignation as wilderness. No intermediate alternatives are entertained. Alternatives are effectively polarized by the BLM, suggesting the only real choices are between complete protection of resources (designation as wilderness) and no protection (continuation of current management and ultimate resource deterioration). Presented with such limited alternatives, we do not believe the President, the Congress, or the American people can fairly judge or assess the qualifications of candidate WSA's.

We are particularly concerned the management alternatives offered by the BLM do not sufficiently address the resource needs of public lands in New Mexico. Inclusion of all WSAs proposed by the BLM for wilderness designation into the national wilderness system would be a serious error in our opinion. Some of these WSAs may be best managed under alternative, special management schemes. Administrative designations could protect key resources (assuming adherence to FLPMA by the BLM) while, at the same time, minimize impacts on specific resource users.

The Horse Mountain WSA, for example, contains the most productive Ponderosa pine forests in the Las Cruces District of the BLM (DEIS/NMSWS, p. 20-13). However, wilderness designation would limit future management of these pine forests, resulting in decadence and their eventual elimination (DEIS/NMSWS, p. 20-13). It would appear a special management designation other than wilderness is desirable for the management of such areas. Certainly, if the spirit of FLPMA is to be followed, the survival of the Horse Mountain Ponderosa pine forests should be given as much attention as the efficacy of wilderness designation.

Another example of the comparative advantage of nonwilderness, special management designation is found in the Big Hatchet Mountains WSA. Here, continuation of ACEC management could provide the BLM and the New Mexico Department of Game and Fish more flexibility in the management of desert bighorn sheep. Since that wildlife species is the BLM's management objective, continuation of management under ACEC designation may well be preferable to inclusion of the WSA into the national wilderness system. Yet another example of the efficacy of special management designation can be seen in the Gila Lower Box WSA. The BLM has clearly recognized that ACEC designation may be more beneficial to wildlife than wilderness designation (DEIS/NMSWS, p. 36-6). In particular, ACEC designation, in contrast to wilderness designation, would allow the BLM to pursue actions more beneficial to improvement of riparian environment, water quality, and channel stability in the Gila Lower Box WSA.

In our opinion, the DEIS/NMSWS is seriously flawed by its omission of and failure to consider reasonable management alternatives to wilderness designation. Not only has the BLM improperly dismissed alternative, special management designations, but it has placed far too little priority on the environmental and management needs of land areas when determining their fitness and suitability for wilderness designation. We return to our initial emphasis on the conservation mandate directed to BLM by FLPMA. Management of resources must not result in the deterioration of those resources. Consequently, we feel the BLM has improperly dismissed the management and conservation roles of special designations other than wilderness. Accordingly, we recommend and request the BLM reassess alternative management designations for proposed wilderness areas in light of FLPMA and that agency's stewardship role. As it stands now, we do not believe the current DEIS/NMSWS is an accurate portrayal of alternatives under which WSAs can be managed or the environmental impacts associated with each of those alternatives.

Summary and Conclusion

The DEIS/NMSWS does not, in our opinion, fulfill the function for which it was intended. The cost of wilderness management and the potential impact of that cost on the future stewardship of nonwilderness lands is ignored. Additionally, the BLM's analysis of the environmental impacts of no-wilderness designation is insufficient and unacceptable. The BLM's projection of inevitable deterioration of resources in WSAs not designated wilderness is indicative more of the failure of the BLM to adhere to FLPMA than to the efficacy of wilderness designation in protecting resources. In our opinion, multiple-use need not connote multiple resource abuse. Finally, the BLM has inappropriately and without justification discounted otherwise viable alternatives to wilderness designation--e.g., special management areas.

Mr. Larry Woodard, State Director

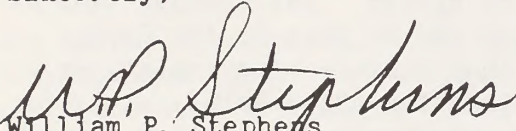
November 21, 1986

0528

Page 7

Because of these gross deficiencies, we recommend the BLM revise the current DEIS/NMSWS to meet its obligation of providing a more definitive and objective wilderness recommendation to the President, the Congress, and the American people.

Sincerely,



William P. Stephens
Director/Secretary

WPS/kh

RESPONSE TO 0528-1

Management costs are not an environmental issue, and therefore, projected management costs are not analyzed in the EIS. Also, there will be no environmental effects resulting from wilderness management costs on nonwilderness BLM lands. This is based upon the BLM budgetary system. Additionally, it should be noted that wilderness management costs will replace current costs associated with interim management of WSAs and costs associated with wilderness studies.

Chapter 2 has been revised to explain that acquisitions would be accomplished through land exchanges on a value for value basis. Specific cost estimates for acquiring split-estate and inholdings will be presented to the Secretary of the Interior in the BLM Wilderness Study Reports which will be forwarded by the President to Congress.

RESPONSE TO 0528-2

BLM is a multiple use agency. Unless an area is under special management, uses over the long-term may result in road construction and minerals exploration. These activities are projected based upon the mineral potential in a WSA, proposals, and trends. Although these surface disturbing activities are consistent with FLPMA, they would degrade wilderness naturalness and wilderness values. It is this degradation or loss that is described in the discussion of impacts to wilderness values under the No Wilderness Alternative.

RESPONSE TO 0528-3

The scope of the proposed action in this EIS is to recommend for legislative action WSAs as either suitable or unsuitable for wilderness. For those WSAs recommended unsuitable for wilderness, the environmental analysis was based upon management action projected under the existing land use plans. In situations where a WSA has important values and the area is recommended unsuitable for wilderness, the values will be given appropriate consideration in existing or upcoming planning efforts. Resource Management Plans (RMP's) will take these special values into account and protect and enhance these values through designation as an Area of Critical Environmental Concern (ACEC) or identification as a special management area.



STATE OF NEW MEXICO
OFFICE OF CULTURAL AFFAIRS
HISTORIC PRESERVATION DIVISION

0541

TONY ANAYA
GOVERNOR

VILLA RIVERA, ROOM 101
228 EAST PALACE AVENUE
SANTA FE, NEW MEXICO 87503
(505) 827-8320

CLARA APODACA
CULTURAL AFFAIRS OFFICER


THOMAS W. MERLAN
DIRECTOR

November 17, 1986

MEMORANDUM

H-332

TO: David Johnson
Natural Resources Department

FROM: Thomas W. Merlan, Director 
Historic Preservation Division

RE: Archaeological concerns: New Mexico Statewide
Wilderness Study, Revised Draft, September, 1986

Thank you for the opportunity to comment on the above document regarding cultural resource concerns.

In general, wilderness designation could have beneficial effects upon archaeological resources within such areas, since development is precluded from such areas. However, cultural resources within such areas still require active management attention from the Bureau of Land Management, including comprehensive site inventory, site stabilization and maintenance, and law enforcement patrol activities to protect sites from vandalism and pot hunting.

Unfortunately, the Bureau's general policy has been to ignore such long-term management responsibilities for archaeological sites within wilderness areas. The Bureau has generally maintained that wilderness designation precludes the Bureau from stabilizing and maintaining archaeological sites within such areas.

In our opinion, such a policy is contrary to the Bureau's legal responsibility for site protection, as outlined in Section 110 of the National Historic Preservation Act, as amended. Other agencies, such as the National Park Service, have been able to conduct archaeological stabilization activities to protect sites from natural deterioration within wilderness areas. We see no inherent legal incompatibility between wilderness designation and archaeological site protection. We recommend that any proposed management plans for Bureau-administered wilderness areas state clearly that the Bureau will undertake archaeological site stabilization and maintenance activities, as necessary to fulfill its obligations under the NHPA.

0541-1

The Bureau also tends to place an extremely low priority on completion of systematic inventory of archaeological sites within wilderness areas. In recent years, the Bureau has completed no inventories within wilderness study areas, except for potential development projects. This again is inconsistent with the Bureau's legal responsibility under Section 110 of the NHPA which requires each federal agency to complete a comprehensive inventory of its archaeological and historic sites.

At present, the majority of wilderness areas have extremely low levels of archaeological inventory. However, a number of the proposed wilderness areas contain highly significant archaeological resources. Unless the Bureau completes additional inventories in wilderness areas, the level of protection given to archaeological sites in these areas is likely to be minimal. The Bureau cannot protect sites within wilderness areas if it does not know what sites are present. It cannot evaluate which sites may be exceptionally vulnerable to vandalism. Without systematic inventory of archaeological sites, the Bureau will be unable to target protective actions, such as law enforcement inspections, in an efficient and effective manner. We recommend that management plans for wilderness areas place a much higher priority on completion of comprehensive inventory.

In summary, while wilderness designation in and of itself may be generally beneficial for archaeological resource protection, the Bureau should not use such designation as an excuse for ignoring its other legal responsibilities for site protection. We recommend that any plans for wilderness management include specific provision for timely completion of comprehensive inventory, stabilization and maintenance and law enforcement patrols of archaeological sites within such areas. Unless plans make specific commitments to such activities, in our opinion, the Bureau is failing to carry out its legal mandate for cultural resource protection.

Let us know if we can be of further assistance.

RESPONSE TO 0541-1

We too see no inherent legal incompatibility between wilderness designation and archaeological site protection. Our BLM Wilderness Management Policy states that:

"Archaeological and historical sites and values are a unique and nonrenewable part of the wilderness resource. They are protected by provisions of the Uniform Rules and Regulations (43 CFR Part 3) to carry out the Antiquities Act of 1906, the Historic Sites Act of 1935, Executive Order 11593, the National Historic Preservation Act of 1966, as amended, and the Archaeological Resources Protection Act of 1979. To the extent not inconsistent with the concept of wilderness preservation and the intent of the Wilderness Act, and objectives for cultural resource management, these resources are available for recreational, scenic, scientific, educational, conservation, and historical uses (including ceremonial or religious use by Native Americans).

Cultural resources, in most instances, will be subject to the forces of nature in the same manner as other wilderness resources. Study or management will not normally include any excavation, stabilization, or interpretation activities. Salvage, rehabilitation, stabilization, reconstruction, and restoration work on archaeological and historic sites; excavation; and intensive inventories may be permitted on a case-by-case basis where the project will not degrade the overall wilderness character of the area and such activity is needed to preserve the particular resource. State Director approval is required for all such projects."



STATE OF NEW MEXICO

OFFICE OF THE GOVERNOR

SANTA FE

87503

0680

TONEY ANAYA
GOVERNOR

December 10, 1986

Mr. Larry Woodward
State Director, NM (912)
Bureau of Land Management
New Mexico State Office
P. O. Box 1449
Santa Fe, New Mexico 87504-1449

RE: BLM New Mexico Statewide Wilderness Study -- Revised Draft EIS

Dear Mr. Woodward:

Sixteen months ago I wrote to your predecessor, Charles Luscher, expressing my disappointment that BLM had, in its Draft EIS, so reduced the number of acres under review for wilderness that even the "all-wilderness alternative" omitted major areas of pristine wilderness. This Revised Draft EIS, though by no means meeting all our objections, is a major improvement over its predecessor. Although we still have concerns involving both BLM policies and the nonwilderness designation decisions reached in a number of cases, in general the Bureau is to be commended for its efforts in undertaking this substantial revision.

This letter constitutes the State of New Mexico's official comments and recommendations regarding the Revised Draft EIS for the New Mexico Statewide Wilderness Study. It summarizes and clarifies my position as Governor on the key issues raised by State agencies in the comments attached. There is no clear consensus among State agencies regarding the proposed action. The Energy and Minerals Department supports BLM's proposed recommendation to designate 16 WSAs as wilderness in their entirety, 12 WSAs with acreage reductions and amended boundaries, and 18 areas as unsuitable for wilderness. All other agencies offer recommendations that would modify BLM's proposed action. The NM Department of Agriculture feels the document as a whole is inadequate and that it should be revised again. My own overall recommendation continues to be that all 46 WSAs should be included in the National Wilderness Preservation System. In the event that recommendations for full wilderness designation are not made by BLM, my conclusions following review of the attached comments are as follows:

0680-1

1. Cultural Resources: Wilderness designation will help protect cultural sites, but active management -- including archeological stabilization -- is needed if BLM is to meet fully its responsibility to protect cultural values under the National Historic Preservation Act.

2. Energy and Mineral Resource Conflicts: It appears from the Energy and Minerals Department comments that the proposed action resolves all significant problems in favor of excluding areas (or amending boundaries to exclude any part of areas) of high development potential from wilderness designation. It appears that mineral and energy values were weighted excessively in the analysis of potential resource conflicts.

0680-2

3. Rare and Endangered Species: Certain WSAs which have been identified as potential reintroduction sites for desert bighorn (Alamo Hueco and Cooke's Range), or which contain threatened, endangered or rare plant species (Cedar Mountains, Los Uvas, Robledo Mountains and Presilla) were not recommended as suitable for wilderness. These areas need either wilderness designation or an alternative protective status to protect their significant values.

4. Management and Budgetary Considerations: Although the Department of Agriculture (NMDA) asserts (without providing evidence) that environmental values in a number of WSAs could be protected without wilderness designation, NMDA does raise a valid issue with respect to the need to determine the management costs of wilderness designation. Sufficient staff and budget must be allocated to manage wilderness areas effectively. NRD notes current violations of Interim Management Plans as cause for concern about whether staffing and budgetary levels adequate to protect all new wilderness areas can be assured. (See also the cultural resources issue raised above.)

0680-3

5. "Manageability": The "manageability" rationale used by BLM as a reason for nonwilderness designation in some instances appears logically at odds with the concept of wilderness. If an area is difficult to manage, it is probably remote and inaccessible. These are among the attributes that made an area a candidate for wilderness status in the first place! This reinforces the need to consider staffing and budgetary levels.

0680-4

6. Alternative Protective Designations: As NMDA has also pointed out in its comments, wilderness designation is only one among a number of special designations under which an area can be managed to protect its unique environmental qualities. (Curiously, NMDA seems to be arguing that because it is only one of the tools BLM has to manage land under FLPMA, it should not be used even where it is the most appropriate

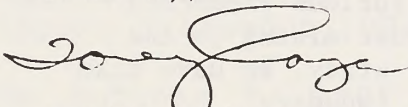
0680-4 (cont.)

tool!) All the agencies commenting appear to agree, and I strongly urge, that all WSAs should receive protective status (such as ONA, RNA, ACEC or a special management plan) to protect the values that made them eligible for wilderness status.

Finally, I encourage the BLM to consider carefully the WSA-specific comments of the Natural Resources Department and the Environmental Improvement Division with respect to land exchanges, alternative protective designations and reconsideration of particular areas as wilderness.

Some public policy decisions, once implemented, are irrevocable. The choice to permit degradation of wilderness by human activity is one of these. The policy of this administration with respect to wilderness has remained consistent: New Mexico must permanently protect its few remaining wild and pristine areas. We urge the BLM to weigh carefully and incorporate these recommendations into its final proposal to Congress, and appreciate the opportunity to comment on this important document.

Sincerely,



TONEY ANAYA
Governor

TA/jrb/tq

Attachment

RESPONSE TO 0680-1

BLM concurs that wilderness designation is one of many options to protect special resource values such as desert bighorn sheep or rare plant species. RMPs will be prepared for the Socorro Resource Area (RA) and the Las Cruces/Lordsburg RA. During the early phase of plan preparation, efforts will be made to identify all relevant planning issues, including desert bighorn sheep and rare plants.

RESPONSE TO 0680-2

We concur that sufficient staff and budget must be allocated to manage wilderness areas effectively. However, management costs are not an environmental issue, and therefore, projected management costs are not analyzed in the EIS. Also, there will be no environmental effects resulting from wilderness management costs on nonwilderness BLM lands. This is based upon the BLM budgetary system. Additionally, it should be noted that wilderness management costs will replace current costs associated with interim management of WSAs and costs associated with wilderness studies.

RESPONSE TO 0680-3

Manageability relates to valid existing rights also known as grandfathered rights which exist in a WSA. Examples include producing oil and gas leases in the Mudgetts WSA or ongoing cinder mining in the West Potrillo Mountains. In the Statewide Wilderness Study, we have also acknowledged other manageability concerns such as WSA boundary configuration as it relates to topography and land ownership as in the Sabinoso and Alamo Hueco WSAs. Accessibility is a management consideration that would be addressed in a wilderness management plan. Accessibility and remoteness are not factors used in developing suitability recommendations.

RESPONSE TO 0680-4

The scope of the proposed action in this EIS is to recommend for Congressional action WSAs as either suitable or unsuitable for wilderness. For those WSAs recommended unsuitable for wilderness, the environmental analysis was based upon management actions projected under the existing land use plans. In situations where a WSA has important values and the area is recommended unsuitable for wilderness, the values will be given appropriate consideration in upcoming planning efforts. RMPs will take these special values into account and protect and enhance these values through designation as an ACEC or identification as a special management area.



STATE OF NEW MEXICO
NATURAL RESOURCES DEPARTMENT

Santa Fe 87503
(505) 827-7835

0681

TONEY ANAYA
GOVERNOR

LEO GRIEGO
SECRETARY

November 20, 1986

Mr. Larry Woodard
Director, Bureau of Land Management
New Mexico State Office
P.O. Box 1449
Santa Fe, NM 87504

Dear Mr. Woodard:

Thank you for the opportunity to review and comment on the New Mexico Statewide Wilderness Study Revised Draft Environmental Impact Statement (DEIS).

On October 3, 1984 State Land Commissioner Jim Baca signed a Memorandum of Understanding (MOU) with the Bureau of Land Management (BLM) to establish a comprehensive, long-term statewide land exchange program between the state and BLM. The Natural Resources Dept. (NRD) recommends that BLM consider trading for the state sections which are located within the boundary or adjacent to a Wilderness Study Area (WSA) in order to block-up ownership patterns. This would facilitate the management of the areas by reducing the impact of the checkerboard patterns which exist at present.

The BLM Wilderness Management Policy (September 1981) does not address management of a wilderness area for wildlife habitat. The existence of wildlife in a particular WSA augments its wilderness characteristics. The management policy should provide for limited vehicular/aircraft use and the development of wildlife waters in order to provide for responsible wildlife management in wilderness areas.

The proposed action recommends 16 WSAs in their entirety and 12 WSAs with acreage reduction and amended boundaries as suitable for wilderness designation. The remaining 18 WSAs are being recommended as unsuitable for wilderness designation. NRD applauds the increase in wilderness designation recommendations by BLM.

0681-1

However, NRD is concerned about the future management of the 18 WSAs not being recommended suitable. There are no other special management recommendations being made for these areas such as Area of Critical Environmental Concern (ACEC), Outstanding Natural Area (ONA), Research Natural Area (RNA), Primitive Areas, or Recreation Lands as defined by the Federal Lands Policy and Management Act of 1976 (FLPMA) and/or 43 CFR 2071, 8223, 8352, and 1610.7-2. Since all the WSAs met the wilderness criteria as defined in the Federal Register, (Department of the Interior, Bureau of Land Management, Wilderness Study Policy, Vol. 47, No. 23, Wednesday, February 3, 1982) NRD would like assurances that the WSAs not being recommended for wilderness will be managed to preserve their unique and wild characteristics either by use of one of the special designations or a special management plan.

Wilderness designations are favorable for soil and water resource concerns. However, the amended boundary recommendations do not provide sufficient acreages to properly and adequately protect these areas from soil and water erosion. As mentioned in the Revised DEIS, there are highly erodible soils within the WSAs and any further or accelerated erosion caused by activity outside the designated areas would contribute considerable degradation toward these resources. Conservation by the utilization of Best Management Practice techniques needs to be implemented to insure a lesser threat on water quality degradation. Plans regarding watershed treatments need to be developed where applicable. This may be handled through coordinated efforts to resolve prior concerns submitted to BLM and by cooperating with local Soil and Water Conservation Districts.

The Little Black Peak/Carrizozo Lava Flow WSA (NM-060-109/110) surrounds the Valley of Fires State Park. The document recommends this area for wilderness but designates an amended boundary for adoption. Designation of the entire study area would be preferable because it would augment wilderness opportunities adjacent to a designated state park.

The Florida Mountains WSA (NM-030-034) is adjacent to Rockhound State Park, Spring Canyon area and protects the park from development and visual intrusion as well as providing expanded recreational opportunities for the park. However, the document does not recommend this area for wilderness designation due to existing mining claims and activities, and due to the land ownership patterns in the area. NRD recommends that BLM pursue land exchange in order to block-up ownership and provide protective status to this area.

The Alamo Hueco Mountains WSA (NM-030-038) is composed of an Oak Juniper Woodland Shrub Ecosystem in the Mexican Highlands Shrub Steppe Province which is unique because it is not now represented nationally in any existing wilderness or in any area under study for wilderness designation. The ecosystem and geological features of the area provide habitat for an unusual wildlife community

0681-2

which includes golden eagles, red-tailed hawks, desert bighorn sheep and possibly the gray wolf. There are several threatened or endangered animal species and candidate plant species in the WSA. Additionally, this WSA has a number of known prehistoric cave sites which are eligible for classification as an archaeological district in the National Register of Historic Places.

0681-2

The Alamo Hueco Mountains WSA is being recommended as nonsuitable for wilderness with no other special management alternative. The Summary of Scoping Table lists both an RNA for the Oak Juniper Woodland Shrub Ecosystem and an ACEC for cultural resources as alternatives that were set aside in favor of the no wilderness recommendation. NRD recommends that BLM reassess their decision for the WSA and manage the area as an RNA of ACEC in order to protect the unique qualities of the area.

Blue Creek WSA (NM-030-026), Cooke's Range WSA (NM-030-031), Florida Mountains WSA (NM-030-034) and Presilla WSA (NM-020-037) all had an ACEC alternative which was set aside in favor of a no wilderness recommendation. The lack of consolidated land ownership patterns were mentioned as rationale in some cases for not using the ACEC management designation. NRD recommends that BLM pursue an active land exchange or purchase program to block up the ownership of these WSAs. Then, these areas could be designated as ACEC to protect the unique resource they contain.

Ibex were introduced in the Florida Mountains. The expanding population in the Florida Mountains WSA (NM-030-034) is now inflicting serious damage to the flora of the mountains. The Ibex have also been observed in the Cooke's Range and West Potrillo Mountains, parts of which are WSAs. NRD recommends that the Ibex population in the southern part of the state be significantly reduced in order to protect the native flora.

The Cooke's Range WSA (NM-030-031) boundary excludes the only known population of Arizona Cypress in New Mexico. The Summary of Scoping states that the location of the cypress was not included "because it would require consideration of lands not nominated for wilderness study and not protected by the BLM Interim Management Policy." Further, ACEC or Recreational Lands designations were considered but set aside in favor of a no wilderness designation for this unique resource and the Revised DEIS does not discuss the possibility of identifying this area for RNA or ONA status, either of which seems particularly appropriate considering the rare status of this population within the state. The presence of Srophularia macrantha in association with the cypress indicates an unusual habitat. NRD recommends that this unique habitat be preserved and protected under one of the special management designations if it is not designated wilderness.

The following WSAs: Cedar Mountains (NM-030-042), Las Uvas (NM-030-065), Robledo Mountains (NM-030-063), and Presilla (NM-020-037) are all recommended as nonsuitable for wilderness

designation. They are locations of threatened or endangered (T&E) and/or rare plant species. NRD recommends that these areas be managed using one of the special management designations to protect these rare plants.

Other recommended WSA's contain habitat of T&E or rare plant species. The document states that these species lists are on file at local BLM offices. These species should be listed in the Revised DEIS to facilitate evaluation. Abronia biglovii, a candidate for federal protection, has recently been found on a gypsum outcrop next to the Rio Chama in the scenic and pastoral section. This species might also occur in similar locations in the Rio Chama WSA (NM-010-059). The site represents a unique disjunct high elevation segment of this gypsum community. Contact Paul Knight in our Resource Management and Development Division for further information.

San Antonio WSA (NM-010-035) contains many natural values because it has been "untrammeled by man" and allowed to remain in a natural state. One of the most significant values is the ephemeral waters which flow from October through June, and riparian vegetation in the canyon bottom which attract a multitude of wildlife during the flow season. The BLM recommendation for San Antonio WSA is no wilderness and states that the Taos Resource Management Plan will address alternative designations in an upcoming management plan. NRD recommends that BLM manage the area under one of the alternative protective designations to protect and preserve its natural values.

Sabinoso WSA (NM-010-055) has a no wilderness recommendation. According to BLM's Wilderness Management Policy, the seven miles of vehicle ways which would be closed under a wilderness designation, can be used for existing grazing uses if the area is designated wilderness. There are no other conflicts identified in the WAR which substantiate the no wilderness recommendation. NRD recommends that BLM change its recommendation in favor of wilderness designation for this area.

There are many documented instances where the Interim Management Policy (IMP) for the WSAs has been violated during the wilderness study. Instruction Memorandum No. NM-85-185, Responsibilities and Requirements for Interim Management of Wilderness Review Lands addresses this problem and states that the regulations will be followed in all cases. The requirements listed to insure proper management include violation monitoring/surveillance and enforcement once the violation has been discovered. Since the limited BLM staff and budget for violation monitoring and enforcement has been a problem during the study, we would like assurance that these management issues will not continue to be a problem once the areas are designated wilderness or managed under a special designation.

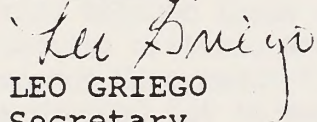
Mr. Larry Woodard
November 20, 1986
Page 5

0681

In support of Instruction Memorandum No. NM-85-185 NRD recommends that BLM increase its volunteer patrol program to cover all resource areas. NRD also recommends that the number of volunteers be increased to a level that is sufficient to effectively monitor the large number of acres involved. NRD would like to see an increase in special agents and rangers. There should be at least one special agent in each resource area to issue citations and take care of all enforcement problems.

In summary, NRD cannot support any alternative that does not protect the unique land qualities which enabled the areas to become WSAs. If the WSAs are not being recommended for wilderness, the area should be managed under a special protective designation which best fits its special qualities. There should be sufficient enforcement to provide adequate assurance that the IMP-type violations will not occur once the WSA is named as a special management area. If we can be assured that all the areas will be managed in a manner which will preserve and protect their special land characteristics and unique resources, NRD can support the proposed action of the agency.

Sincerely,


LEO GRIEGO
Secretary

RESPONSE TO 0681-1

The scope of the proposed action in this EIS is to recommend for Congressional action WSAs as either suitable or unsuitable for wilderness designation. For those WSAs recommended unsuitable for wilderness, the environmental analysis was based upon management actions projected under the existing land use plans. In situations where a WSA has important values and the area is recommended unsuitable, these values will be given consideration in upcoming plans. Special values can be protected and enhanced through designation as an ACEC or identification as a special management area.

RESPONSE TO 0681-2

An RMP will be prepared for the Las Cruces/Lordsburg RA. This RMP will analyze potential ACECs and special management areas. Preparation for this plan are scheduled to begin in late 1988.

RESPONSE TO 0681-3

This revision has been made in the text.



TONY ANAYA
GOVERNOR

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

525 Camino de los Marquez

Santa Fe, New Mexico

87501

0682

November 18, 1986

MEMORANDUM

TO: Charles Roybal
FROM: Kay Hatton
THROUGH: Jim Hill
SUBJECT: Review of the BLM New Mexico Statewide Wilderness Study - Revised
Draft EIS: Coal and Geothermal

Empedrado WSA: 910 acres with moderate and 1,955 acres with high potential for coal and humates would be closed to exploration and development. BLM evaluated the proposal to designate the northern half (where the coal occurs) no wilderness and the southern half (where high wilderness values occur) as wilderness. This alternative was set aside because "Coal and humates are unlikely to be leased because these resources did not meet the prescribed development potential criteria and were therefore not carried forward in the Rio Puerco Resource Management Plan for further consideration for leasing." Since the BLM has decided not to consider these areas for coal leasing in the short-term whether or not Empedrado receives wilderness status, then no high level of coal resource development is considered impacted under the Proposed Action. The BLM stated that only long-term low to moderate levels of development would be foregone.

Ignacio Chavez/Chamisa WSAs: 1,007 acres with moderate potential for coal and humates, and 7,644 acres with high potential would be closed to exploration and development. No coal or humate resources are located in the add-on acres. If BLM's existing land use plan were amended to further consider the area for coal leasing, a successful exploration program could possibly lead to the development of a small surface or underground coal mine; however, this is not considered probable in the foreseeable future because of the broken, steep terrain.

La Lena WSA: 2,437 acres with high and 2,431 acres with moderate potential for coal and humates would be closed to exploration and development. If the land use plan were amended to make these lands available, small surface or underground mines could be developed. The potential coal resources occur in the northern half of the WSA. No leases have been issued in this or the above WSAs, and the Rio Puerco RMP did not recommend the resource for leasing consideration in the short term. If

OFFICE OF THE SECRETARY
(505) 827-5950

ADMINISTRATIVE SERVICES DIVISION
(505) 827-5925

CONSERVATION & MANAGEMENT DIVISION
(505) 827-5860

MINING & MINERALS DIVISION
(505) 827-5970

RESOURCE & DEVELOPMENT DIVISION
(505) 827-5900

OIL CONSERVATION DIVISION
(505) 827-5800

Land Office Building P.O. Box 2088 Santa Fe, New Mexico 87501

WSA	Resource Impacted	Acreage Potential High - Moderate		BLM proposed action	Comments
Cabezon	Oil and gas	8,118		All wilderness	Low potential outweighed by wilderness values and presence of granite intrusives in the area.
Empedrado	Oil and gas	9,002	388	All wilderness	Some high potential in the future for shallow oil. Exploration not likely any time soon.
Ignacio Chavez	Oil and gas	568	9,393	Amended Boundry I	Concur - small amount high potential acreage on north edge of WSA
La Lena	Oil and gas	5,980	4,330	All wilderness	Appears to have better than average future potential along north part of WSA. WSA would surround significant state acreage.
Ojito	Oil and gas	11,700		All wilderness	Low potential outweighed by wilderness values.

leased, moderate levels of exploration could result in low to moderate levels of development. The possibility of a moderate - sized coal surface mine in the northern half would be precluded; however, only long-term low to moderate levels of development would be foregone.

Ojito WSA: 935 acres of moderate potential geothermal resources would be closed to exploration and development, but they are not considered adequate to support commercial energy production in the short term because of the small amount of acreage involved. Only long term low levels of development would be foregone under the Proposed Action.

In sum, I believe that BLM's analyses of the WSAs were adequate, and agree that no significant impact to the state's exploitation of its coal and geothermal resources would occur if the Proposed Action were taken.

KH/vb



ENERGY AND MINERALS DEPARTMENT

525 Camino de los Marquez

Santa Fe, New Mexico

87501

0683

TONEY ANAYA
GOVERNOR

November 17, 1986

MEMORANDUM

TO: Charles Roybal

FROM: Bill Hatchell *BH*

THROUGH: Jim Hill

SUBJECT: Review of selected WSA's, BLM Revised Draft Environmental Impact Statement for New Mexico Statewide Wilderness Study

In a review of the Revised Draft EIS for WSA's, I have found that all resource impact concerns identified earlier (refer to memorandum dated 17 July 1985 from Paul Biderman to Sally Rodgers) involving uranium and hard-rock minerals have been addressed and adequately met through recommended or proposed actions.

A brief summary of proposed actions:

- a. No Wilderness Area Alternative status has been recommended for the Cookes Range, Devils Backbone, Eagle Peak, Florida Mts., Mesita Blanca, Presilla, Roblado Mts., Stallion, and Veranito WSA's where a wide array of hard rock and other minerals exist with moderate and high potential. The proposed No Wilderness Area action will assure continued access to these minerals.
- b. Horse Mountain, Organ Mts. and the Sierra Ladrones WSA's all include considerable acreages with high to moderate potential and actual (defined) resources. The proposed action for all three WSA's is the Amended Boundary Alternative which will exclude high-potential mineral acreage and will, in effect, assure access.

In conclusion, all of my concerns cited in the original WSA review of July 1985 have been met, and I concur wholeheartedly with each of the recommended actions indicated above.

BH/vb

OFFICE OF THE SECRETARY
(505) 827-5950ADMINISTRATIVE SERVICES DIVISION
(505) 827-5925CONSERVATION & MANAGEMENT DIVISION
(505) 827-5860MINING & MINERALS DIVISION
(505) 827-5970RESOURCE & DEVELOPMENT DIVISION
(505) 827-5900OIL CONSERVATION DIVISION
(505) 827-5800

Land Office Building, P.O. Box 2088, Santa Fe, New Mexico 87501

NEW MEXICO INTERSTATE STREAM COMMISSION

COMMISSION MEMBERS

ALBERT E. UTTON, Chairman, Albuquerque
S. E. REYNOLDS, Secretary, Santa Fe
J. PHELPS WHITE III, Roswell
GEORGE BRANTLEY, Carlsbad
WOODROW O. GARY, Hatch
GROVE BURNETT, Vallecitos
ANN SMYTHE-COONS, Farmington
M. H. SALMON, San Lorenzo
TRACY SEIDMAN, Wagon Mound

0684

BATAAN MEMORIAL BUILDING
STATE CAPITOL
SANTA FE, NEW MEXICO 87503

November 7, 1986

Mr. Leo Griego, Secretary
Natural Resources Department
Villagra Building
Santa Fe, New Mexico 87503

Re: Revised Draft Environmental Impact Statement for
the New Mexico Statewide Wilderness Study - Bureau
of Land Management (BLM)

Dear Leo:

Our comments on the above referenced report are as follows.
Several of these comments are similar to comments provided to the
BLM upon our review of the previous draft.

Volume 1

1. Table 5-2, page 5-9. Under Natural Resources Department, delete "Water Resources Division" and "State Engineer" and insert, as a separate agency, "State Engineer/Interstate Stream Commission".

Volume 2

1. Appendix 1, Rio Chama WSA, page 1-8. The comment in our letter dated July 26, 1985 is relevant and was not addressed by the revised draft. This comment is repeated. Under the subheading WATER, the first sentence should be corrected by changing the last word "west" to "east". Also, the following should be added to the discussion under the subheading WATER:

"The river flow in the WSA is regulated by the upstream El Vado and Heron Reservoirs which provide conservation storage for downstream agricultural, municipal and recreational uses. The Rio Chama WSA is within the declared Rio Grande Underground Water Basin. Use of the surface flow of the mainstem of the Rio Chama below El Vado Dam has been adjudicated and is supervised by a watermaster appointed by the U. S. District Court, District of New Mexico. The waters of the Rio Chama are fully appropriated under state



ENERGY AND MINERALS DEPARTMENT

525 Camino de los Marquez

Santa Fe, New Mexico

87501

0683

TONEY ANAYA
GOVERNOR

November 17, 1986

MEMORANDUM

TO: Charles Roybal

FROM: Bill Hatchell *BH*

THROUGH: Jim Hill

SUBJECT: Review of selected WSA's, BLM Revised Draft Environmental Impact Statement for New Mexico Statewide Wilderness Study

In a review of the Revised Draft EIS for WSA's, I have found that all resource impact concerns identified earlier (refer to memorandum dated 17 July 1985 from Paul Biderman to Sally Rodgers) involving uranium and hard-rock minerals have been addressed and adequately met through recommended or proposed actions.

A brief summary of proposed actions:

- a. No Wilderness Area Alternative status has been recommended for the Cookes Range, Devils Backbone, Eagle Peak, Florida Mts., Mesita Blanca, Presilla, Roblado Mts., Stallion, and Veranito WSA's where a wide array of hard rock and other minerals exist with moderate and high potential. The proposed No Wilderness Area action will assure continued access to these minerals.
- b. Horse Mountain, Organ Mts. and the Sierra Ladrones WSA's all include considerable acreages with high to moderate potential and actual (defined) resources. The proposed action for all three WSA's is the Amended Boundary Alternative which will exclude high-potential mineral acreage and will, in effect, assure access.

In conclusion, all of my concerns cited in the original WSA review of July 1985 have been met, and I concur wholeheartedly with each of the recommended actions indicated above.

BH/vb

OFFICE OF THE SECRETARY
(505) 827-5950ADMINISTRATIVE SERVICES DIVISION
(505) 827-5925CONSERVATION & MANAGEMENT DIVISION
(505) 827-5860MINING & MINERALS DIVISION
(505) 827-5970RESOURCE & DEVELOPMENT DIVISION
(505) 827-5900DIL CONSERVATION DIVISION
(505) 827-5800

Land Office Building P.O. Box 2088 Santa Fe, New Mexico 87501

NEW MEXICO INTERSTATE STREAM COMMISSION

COMMISSION MEMBERS

ALBERT E. UTTON, Chairman, Albuquerque
S. E. REYNOLDS, Secretary, Santa Fe
J. PHELPS WHITE III, Roswell
GEORGE BRANTLEY, Carlsbad
WOODROW O. GARY, Hatch
GROVE BURNETT, Vallecitos
ANN SMYTHE-COONS, Farmington
M. H. SALMON, San Lorenzo
TRACY SEIDMAN, Wagon Mound

0684

BATAAN MEMORIAL BUILDING
STATE CAPITOL
SANTA FE, NEW MEXICO 87503

November 7, 1986

Mr. Leo Griego, Secretary
Natural Resources Department
Villagra Building
Santa Fe, New Mexico 87503

Re: Revised Draft Environmental Impact Statement for
the New Mexico Statewide Wilderness Study - Bureau
of Land Management (BLM)

Dear Leo:

Our comments on the above referenced report are as follows.
Several of these comments are similar to comments provided to the
BLM upon our review of the previous draft.

Volume 1

1. Table 5-2, page 5-9. Under Natural Resources Department, delete "Water Resources Division" and "State Engineer" and insert, as a separate agency, "State Engineer/Interstate Stream Commission".

Volume 2

1. Appendix 1, Rio Chama WSA, page 1-8. The comment in our letter dated July 26, 1985 is relevant and was not addressed by the revised draft. This comment is repeated. Under the subheading WATER, the first sentence should be corrected by changing the last word "west" to "east". Also, the following should be added to the discussion under the subheading WATER:

"The river flow in the WSA is regulated by the upstream El Vado and Heron Reservoirs which provide conservation storage for downstream agricultural, municipal and recreational uses. The Rio Chama WSA is within the declared Rio Grande Underground Water Basin. Use of the surface flow of the mainstem of the Rio Chama below El Vado Dam has been adjudicated and is supervised by a watermaster appointed by the U. S. District Court, District of New Mexico. The waters of the Rio Chama are fully appropriated under state

law. The San Juan-Chama Project imports an average of 110,000 acre-feet of Colorado River Basin water into the Rio Grande Basin. Heron Reservoir is the terminal storage for the project and releases the imported water to downstream users via the Rio Chama."

The reason for our recommendation to include this item is twofold. First, to clarify that the operation of the reservoirs upstream and downstream of the WSA necessarily regulates the natural flow of the river. Secondly, to emphasize that all waters of the Rio Chama Basin are fully appropriated.

The Rio Chama WSA probably includes the hydroelectric power site identified as No. PS-33, Gallina Peak, in the Hydroelectric Appraisal Report and Site Feasibility Study prepared for Plains Electric Generation and Transmission Cooperative, Inc., dated June 1960. Consideration of this potential site for future hydroelectric power development should be included in the report because failure to do so would not adequately assess a potentially significant impact of designation of the Rio Chama WSA as a wilderness.

2. Appendix 3, San Antonio WSA, page 3-7. The last sentence of the last paragraph under the heading SOILS does not include the units of the listed salinity value of four. We assume that the correct units are millimhos per centimeter.

3. Appendix 5. Emprado WSA, page 5-9. The last sentence of the next to last paragraph refers to "...annual discharge recorded at the gage...". It is suggested that the gage be identified and located. We assume this gage must be Arroyo Chico at Guadalupe, New Mexico, 08340500.

4. Appendix 8, La Lena WSA, page 8-9. The incomplete sentence at the top of the page refers to "...annual discharge recorded at the gage...". It is suggested that the gage be identified and located.

Volume 3

1. Appendix 36. Gila Lower Box WSA. Public Law 90-537, Central Arizona Project Authorization, directed the Secretary of the Interior "...to contract with water users in New Mexico for water from the Gila River, its tributaries and underground water sources in amounts that will permit consumptive use of water in New Mexico of not to exceed and annual average in any period of ten consecutive years of 18,000 acre-feet...", and authorized the Hooker Reservoir or suitable alternative to implement the additional consumptive use.

The Bureau of Reclamation has studied several features to implement the additional consumptive use and is currently studying the Conner Reservoir site, off-stream storage sites and direct pumping from the river. Due to environmental consid-

erations at the Conner and Hooker sites and because the feasibility of direct pumping from the river coupled with offstream storage is uncertain, the Fuller Ranch and Gila Lower Box sites in the Gila Lower Box WSA as well as the ground water aquifer in the Red Rock Valley, portions of which are in the Gila Lower Box WSA, are potential alternative sites. Careful consideration of this potential need for additional water resources development should be included in any study of the WSA.

Please contact us if you have any questions.

Sincerely,

PBM:JCG:bmm

Philip B. Mutz
Interstate Stream Engineer

By: Jay C. Groseclose
Jay C. Groseclose, P.E.
Staff Engineer

RESPONSE TO 0684-1

This text revision has been made.

RESPONSE TO 0684-2

This text revision has been made.

RESPONSE TO 0684-3

This text revision has been made.

RESPONSE TO 0684-4

This text revision has been made.



0685

DEPARTMENT OF GAME AND FISH

November 14, 1986

Mr. David Johnson
Natural Resources Department
Villagra Building
Santa Fe, NM 87503

Dear David:

My staff has reviewed the Revised Draft Environmental Impact Statement for the Bureau of Land Management (BLM) Wilderness Analysis Report. Basically, the 28 Wilderness Study Areas (WSA's) proposed by BLM for inclusion in the National Wilderness Preservation System are acceptable. However, I have the following comments on wilderness designation as it relates to my departments objectives.

Depending on the extent of protection placed on a wilderness area, wilderness classification has the advantage of habitat preservation. A basic prerequisite to viable wildlife populations is suitable habitat, and the Wilderness Act of 1964 affords substantial habitat protection. Other actions may influence the amount of protection given an area designated as wilderness, such as exceptions made in a Wilderness Management Plan and mineral, oil, and gas claims made prior to The Federal Land Policy and Management Act (FLPMA) of 1976.

Maintaining the wildlife and fish resources of the state in a viable condition for future generations to use and enjoy is my department's mandated responsibility. As long as suitable habitat remains available for wildlife, we have the basis to achieve this objective. Of concern to my department is how the designation of a particular area as wilderness may hinder our ability to manage the wildlife resources in order to maintain and perpetuate healthy populations into the future.

Examples of management techniques that may be hampered in an area designated as wilderness would include habitat improvement projects (development of water catchment units) and population manipulation projects (capture and transplant of animals with the aid of mechanical means). I recognize that there are provisions in the Wilderness Management Policy of the U.S. Department of the Interior, Bureau of Land Management, September, 1981, that may provide exceptions to these obstacles. The most likely avenue for providing my department with continued wildlife and fisheries management capabilities in wilderness areas would be through provisions made in an area's Wilderness Management Plan, or through a Memorandum of Understanding between the BLM and this department. Additional provisions will be needed in order for us to fully meet our legal mandate of maintaining the state's fish and wildlife resources.

0685-1

The recommendation by BLM for the exclusion of certain WSA's from the National Wilderness Preservation System was based on a variety of reasons, including unmanageable boundaries, land status conflicts and pre-FLPMA mineral, oil and gas claims. I realize that there are considerations that go beyond certain groups desires to see areas preserved in a pristine condition for future generations. Legal mandates, claims, and administrative constraints must be considered. What I am seeking is that wildlife receive equitable consideration through habitat protection. I urge the BLM to continue pursuing other alternatives that would provide the necessary protection of habitat within these WSA's. Many of these areas were initially considered because of some unique attribute and efforts should be directed towards maintaining them.

0685-2

My department has a vested interest in certain WSA's that BLM recommended not be designated as wilderness. The Alamo Hueco WSA is the site of a recent reintroduction of endangered desert bighorn sheep, and Cooke Range WSA is a potential reintroduction site. These areas were recommended by BLM for no wilderness designation because of either boundary management problems or resource claims made prior to 1976. Both of these sites are important to our desert bighorn reintroduction program. If these areas that constitute critical habitat for desert bighorn do not receive the necessary management emphasis, they may no longer be viable locations for desert bighorn sheep. As a result, another species becomes further imperiled because of man's encroachment. Wilderness designation affords the greatest degree of habitat protection and that may prove to be necessary for the survival of some species. However, other alternatives may be available to assist this effort and should be considered for important areas such as those aforementioned.

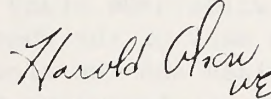
David Johnson

-3-

November 14, 1986

If you have any questions please contact Andrew Sandoval of this office at 827-7952.

Sincerely,

A handwritten signature in cursive script, appearing to read "Harold Olson", with a small "ue" written below the name.

Harold F. Olson
Director

rsj

cc: John Brown (Office of Policy Analysis)
Dan Sutcliffe (Chief-Game Management, NMGF)
Bill Baltosser (Chief-Biological Services, NMGF)
Andrew Sandoval (Assistant Chief-Biological Services,
NMGF)
Area Supervisors

RESPONSE TO 0685-1

The scope of the proposed action in this EIS is to recommend for Congressional action WSAs as either suitable or unsuitable for wilderness designation. For those WSAs recommended unsuitable for wilderness, the environmental analysis was based upon management actions projected under the existing land use plans. Wildlife has received consideration in the wilderness study as a special feature or supplemental value in many of the WSAs. In situations where a WSA has important wildlife values and the area is recommended unsuitable, wildlife will be given consideration in managing the area under the existing plan. If more emphasis is needed on wildlife, this issue will be addressed in upcoming plans. Wildlife habitat can be enhanced through designation as an ACEC, identification as a special management area, or identification for preparation of a Habitat Management Plan (HMP).

RESPONSE TO 0685-2

BLM does not feel that reintroduction of desert bighorn sheep is dependent upon wilderness designation of an area. Alternate designations made through RMPs, such as ACEC designation, can be used to effectively provide protection and habitat improvement for desert bighorn sheep.

The lands encompassing the Alamo Hueco and Cooke's Peak WSAs will be studied in the upcoming Las Cruces/Lordsburg RMP in 1988. During preparation of RMP, efforts will be made to identify all relevant planning issues including potential desert bighorn sheep.



STATE OF NEW MEXICO

0686

ENVIRONMENTAL IMPROVEMENT DIVISION

P.O. Box 968, Santa Fe, New Mexico 87504-0968
(505) 984-0020

December 9, 1986

Mr. John Brown
Department of Finance and Administration
State Capitol Building
Santa Fe, New Mexico 87503

Re: NM Statewide Wilderness Study 116ER

Dear John:

The Environmental Improvement Division fully supports the position of the Governor to recommend that all Wilderness Study Areas in the state be included in the BLM Wilderness system. Although wilderness management does not directly fall within EID's area of regulatory jurisdiction, we recognize that protection of wilderness lands yields many benefits in support of our broader mission to protect the overall environment of the state. Without question the prevention of degradation in pristine areas due to a variety of human activities (e.g. road construction, mineral development, developed recreation, etc.) will result in a higher level of environmental quality for these lands.

The BLM itself has acknowledged that each study area contains important and unique natural values. At the same time, we do not believe that even a recommendation of all wilderness represents an unduly large percentage of public land holdings in the state, or an unreasonable infringement upon other more developed resource values (all of which occur in sufficiency on other lands in New Mexico held by the BLM as well as other land owners). We urge the BLM to demonstrate a strong commitment to wilderness by setting aside as much of this rapidly diminishing resource as possible. The environmental and other benefits will accrue not only to us in the near-term, but to the many generations of New Mexicans that follow.

In the revised Statewide Wilderness Study and DEIS, there are several examples of recommendations being made against wilderness on the questionable grounds of resource conflicts and/or manageability concerns. We continue to be unconvinced of the underlying premises upon which many such judgements were made; these issues were addressed in depth in the Governor's letter on the original Draft EIS.

For example, the Cook's Range WSA (#33 - recommendation of No Wilderness) was rejected by the BLM because of mineral values which are speculative at best, at the same time that the BLM recognizes such outstanding and unique wilderness values of the area as petroglyph sites, scenic quality, and historical significance. It is difficult to understand why wilderness status was not recommended in this case.

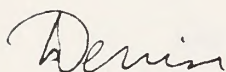
Mr. John Brown
December 9, 1986
Page 2

we are also troubled that insufficient attempts were made to in some way modify original study area boundaries such that the most critical resource values could still be preserved under wilderness designation. For example, the San Antonio WSA boundary (#3 - recommendation of No Wilderness) could be amended to include only the San Antonio Canyon and that portion of the WSA west of the Canyon. In this way, important winter elk habitat, year round habitat for an antelope herd, and the presence of T & E plant species could still be protected. In the Alamo Hueco Mountain WSA (#29 - recommendation of No Wilderness), an amended boundary encompassing the eastern half of the WSA would save an important area containing the nest sites of several different raptors, a large population of javelinas, T & E plant species, and a site for the possible re-introduction of the Desert Bighorn.

In line with our priority to maximize protection for the important resource values present in all the WSA's, we urge that, in the event that a full wilderness recommendation is not made by the BLM, protection of special natural resource values be ensured by means of other administrative mechanisms available to the agency. The State of the New Mexico Natural Resources Department and other agencies make specific suggestions for such possible protection statuses in their comments, including designations such as ACEC's, ONA's, RNA's, and others.

We appreciate the opportunity to comment on this document, and hope that the BLM will not let pass this unique opportunity to provide permanent protection for New Mexico's remaining pristine lands.

Sincerely yours,



Denise D. Fort
Director

GARREY CARRUTHERS
Governor



OFFICE of the GOVERNOR
State of New Mexico
Santa Fe 87503

February 25, 1987

Mr. Larry L. Woodard
State Director, BLM
P. O. Box 1449
Santa Fe, NM 87501

Dear Mr. Woodard:

This letter constitutes the official position of the State of New Mexico on your New Mexico Statewide Wilderness Study/Revised Draft Environmental Impact Statement (EIS). Late last year you received technical comments from a number of state agencies, many of which are certainly worthy of your consideration. I do not agree, however, with the overall recommendation of the previous administration that all wilderness study areas be included in the National Wilderness Preservation System, but rather support your recommendations as written in the EIS. I do have some general concerns that I trust will be given thoughtful consideration in finalizing this important document.

First, I am not convinced with what appears to be your premise that destruction of wildlife habitat, deterioration of cultural resources, degradation of vegetation and other values are necessary outcomes of not designating an area as wilderness. The inevitability of resource deterioration as the primary argument supporting wilderness designation ignores alternative designations that could accomplish protection of desired resource values without having to designate an area as wilderness. An example would be the designation of "Areas of Critical Environmental Concern."

As we both well know, FLPMA directs the BLM to manage public lands "...in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resources, and archeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy and use..." Regardless of a landscape's official designation, the State of New Mexico expects the BLM to manage all resources on New Mexico public lands

1 (continued)

in accordance with the nondegradation criteria of FLPMA. I am well aware of the delicate balance between the need to preserve important resource values and the need to not tie our hands to future development and management opportunities. This balance can best be accomplished through use of the full range of designation tools you have at hand. I would encourage you to re-examine carefully those areas recommended for wilderness inclusion to see if some other method of protection would be more appropriate.

2

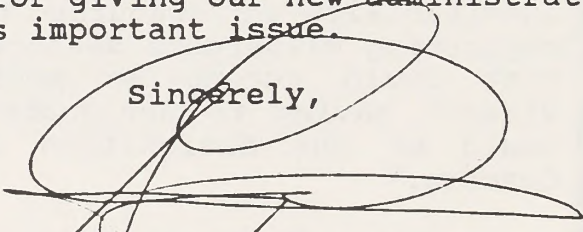
Another concern I have is that the BLM should provide an analysis of management costs resulting from wilderness designation. An important question we raise is, will the management needs of wilderness areas entail reductions in funds or manpower otherwise intended for the management of nonwilderness lands? The State of New Mexico requests assurance from the BLM that management of wilderness areas will not adversely affect nor detract from the BLM's commitment to the stewardship of nondesignated public lands.

3

Finally, the State of New Mexico is concerned with the BLM's failure to address the issue of water rights in the draft EIS. The impact of wilderness designation on water rights is an issue of paramount importance to New Mexicans. The State of New Mexico takes the position that the creation of wilderness should not be accompanied by the creation of any federal reserved water rights. This is a matter we would urge you to address in preparing your final recommendations.

I encourage the BLM to respond to the issues and concerns which I have addressed above. Thank you for giving our new administration the opportunity to comment on this important issue.

Sincerely,



Garrey Carruthers
Governor

GC:TB:mc

RESPONSE TO GOVERNOR CARRUTHERS

RESPONSE TO 1

BLM is a multiple use agency. Unless an area is under special management, uses over the long-term may result in road construction and minerals exploration. Population increases are also expected to result in increased off-road vehicle use over the long-term. These activities are projected based upon the mineral potential in a WSA, proposals, and trends. Although these surface disturbing activities are consistent with FLPMA, they would degrade wilderness naturalness and wilderness values. It is this degradation or loss that is described in the discussion of impacts to wilderness values under the No Wilderness Alternative.

RESPONSE TO 2

Management costs are not an environmental issue, and therefore, projected management costs are not analyzed in the EIS. Also, there will be no environmental effects resulting from wilderness management costs on nonwilderness BLM lands. This is based upon the BLM budgetary system. Additionally, it should be noted that wilderness management costs will replace current costs associated with interim management of WSAs and costs associated with wilderness studies.

RESPONSE TO 3

The issue of water rights in wilderness is currently before the Congress. It is our understanding that a solution is near and that this solution will be in the form of legislative language that defines water resource management in wilderness. Until this issue can be resolved, it is doubtful that any wilderness legislation will be enacted.

RESPONSES TO SUBSTANTIVE COMMENTS FROM
INDIVIDUALS AND ORGANIZATIONS

ID NUMBER: 0095 (The response to this comment applies to the 62 comments which supported the Earth First! proposal.)

NAME: Andrew Main - Earth First!

COMMENT: "I write in support of the New Mexico Earth First! proposal for BLM Wilderness. I enclose a map and list outlining this proposal, for any who may not be familiar with it." (The New Mexico Earth First! proposal recommended approximately 5.3 million acres for wilderness designation.)

RESPONSE: To analyze all reasonable alternatives, BLM followed a process to screen out areas lacking mandatory wilderness characteristics. This process is known as the BLM wilderness inventory process. This process included public involvement and procedures for appeals. At the completion of the inventory of the 12.9 million acres of BLM managed lands in New Mexico, approximately 1.2 million acres were identified as having mandatory wilderness characteristics. These areas became WSAs and they were studied in an EIS. Approximately 950,000 acres have been studied as part of the New Mexico Statewide Wilderness Study and the maximum wilderness alternative is the All Wilderness Alternative. The Earth First! proposal as well as the New Mexico BLM Wilderness Coalition proposal recommends lands outside the BLM wilderness study. Because these lands are not managed by BLM or were screened out during the inventory, these lands were not included in the study. If, at some future date, BLM acquires additional lands and these lands have potential for wilderness designation, they would be studied by BLM to determine their suitability for wilderness designation. Depending upon the result of that study, BLM would make a recommendation for wilderness designation.

ID NUMBER: 0100/0105

NAMES: Judith Bishop/Jim Fish - New Mexico BLM Wilderness Coalition

COMMENT: "Failure to Consider Public Comments. The BLM has been remarkably unwilling to make changes in its recommendations despite overwhelming public support for some of the areas recommended nonsuitable (i.e., the no-wilderness alternative). Even worse, changes have been in the other direction. A prime example is Antelope WSA, which is adjacent to the Little San Pascual Wilderness on the Bosque del Apache National Wildlife Refuge. Although a portion of this area was recommended suitable for wilderness designation in the May 1985 document, the BLM has now changed the recommendation for the entire area to nonsuitable without an adequate explanation and in direct opposition to public comments. According to the BLM, 340 general comments and ten specific comments supporting wilderness for Antelope were received during the 1985 public comment period. The one comment in opposition to wilderness designation listed possible adverse impact on the minerals industry. The BLM's own assessment of this issue is summarized on page 16-10 of the WAR: 'There is no evidence of locatable mineralization in the WSA. The geologic environment in the WSA is not favorable for the occurrence of mineralization.'"

RESPONSE: Public comments have played an important role during the wilderness inventory and study phases. Along with public comments, input from other governmental agencies is used to assist BLM in analyzing impacts and developing alternatives and recommendations. The nonwilderness recommendation for the Antelope WSA was based upon comments BLM received from the U.S. Fish and Wildlife Service (USFWS) during the scoping period for the Revised Draft EIS (January 18 through February 18, 1986). The USFWS recommended no wilderness for Antelope WSA because they felt that the area has been severely impacted by livestock grazing and was unnatural in character. Although the Antelope WSA is adjacent to the USFWS San Pascual Wilderness, based upon USFWS comments and BLM position that the area has low quality wilderness values, the recommendation for the Antelope WSA is nonsuitable.

Public comments in support of wilderness played an important role in changing the proposed action for the Empedrado WSA (9,007 acres), La Lena WSA (10,438 acres), and Cowboy Spring WSA (6,699 acres). These areas were previously recommended nonsuitable.

ID NUMBER: 0100/0105 (The response to this comment applies to the 184 comments which supported the New Mexico BLM Wilderness Coalition Proposal.)

NAMES: Judith Bishop/Jim Fish - New Mexico BLM Wilderness Coalition

COMMENT: "The Coalition Proposal for 1,850,228 acres of wilderness includes many outstanding areas that the BLM claims are entirely nonsuitable for wilderness and much larger boundaries for some areas for which the BLM recommends wilderness designation."

RESPONSE: To analyze all reasonable alternatives, BLM followed a process to screen out areas lacking mandatory wilderness characteristics. This process included public involvement and procedures for appeals. At the completion of the inventory of the 12.9 million acres of BLM managed lands in New Mexico, approximately 1.2 million acres were identified as having mandatory wilderness characteristics. These areas became WSAs and they were studied in an EIS. Approximately 950,000 acres have been studied as part of the New Mexico Statewide Wilderness Study and the maximum wilderness alternative is the All Wilderness Alternative. The Earth First! proposal as well as the New Mexico BLM Wilderness Coalition proposal recommends lands outside the BLM wilderness study. Because these lands are not managed by BLM or were screened out during the inventory, these lands were not included in the study. If, at some future date, BLM acquires additional lands and these lands have potential for wilderness designation, they would be studied by BLM to determine their suitability for wilderness designation. Depending upon the result of that study, BLM would make a recommendation for wilderness designation.

ID NUMBER: 0100/0105

NAMES: Judith Bishop/Jim Fish - New Mexico BLM Wilderness Coalition

COMMENT: "In addition, the BLM fails (in Volume 1 of the DEIS [Draft Environmental Impact Statement]) to recognize a distinction between mining claims that were filed before and after passage of FLPMA on October 21, 1976. The rights of valid pre-FLPMA mining claims are protected under the law. Even here, however, any mining operations must be regulated to minimize impacts on wilderness values. Operations on post-FLPMA claims must be regulated to prevent any impairment of wilderness values in the WSAs. Only 157 of the 689 mining claims in the WSAs are pre-FLPMA."

RESPONSE: For both the pre-FLPMA and post-FLPMA valid mining claims, the locatable mineral operator's rights under Interim Wilderness Management are different than those rights under Wilderness Management. Interim Wilderness Management procedures, including regulations in 43 CFR 3802, only concern lands being studied for potential wilderness designation. This EIS focuses on impacts associated with designating areas as wilderness or not designating areas as wilderness and is not analyzing impacts under Interim Wilderness Management.

All claimants locating within lands designated as wilderness areas prior to mineral closure enjoy the right to develop their claims to their fullest potential as long as a valid discovery was made prior to the mineral closure. Operations in wilderness areas must conform to Section 4(d)(3) of the 1964 Wilderness Act as specified in Section 603 of the FLPMA of 1976. Thus claimants with properly located and maintained claims, which are in conformance with regulations in 43 CFR 8560.4-6 and 43 CFR 3809, may exercise all actions reasonably incident to mining to develop their claims even if wilderness values are impaired. This right is in no way dependent upon whether the claim was located prior to or after the passage of FLPMA. Thus, there is no reason to discuss pre-FLPMA vs. post-FLPMA mining claims when considering impacts associated with designating or not designating the subject lands as wilderness.

ID NUMBER: 0100/0105

NAMES: Judith Bishop/Jim Fish - New Mexico BLM Wilderness Coalition

COMMENT: "To evaluate community diversity, the BLM used the Bailey-Kuchler landform and potential natural vegetation system. This system is extremely broad-brush, encompassing the entire United States. Even though the BLM modified the system somewhat, it is still not detailed enough and resulted in inadequate consideration being given to some deserving plant communities such as Madrean woodland, Great Plains grassland, and desert dune shrubland found in the Alamo Hueco, Sabinoso, and Antelope WSAs, respectively. It is recommended that the BLM reconsider its recommendations on the basis of a regional or statewide diversity index such as the Brown-Lowe-Pase vegetation classification system."

RESPONSE: The BLM Wilderness Study Policy: Policies, Criteria, and Guidelines for Conducting Wilderness Studies on Public Lands states:

"The Bailey-Kuchler system was selected because it is a land classification system which facilitates planning at the National level and provides a broad synthesis of current knowledge about the ecosystem geography of the country. It also serves as a useful reference for those who desire an overview on a comparable basis of ecosystem and potential National Wilderness Preservation System (NWPS) units. Land areas providing ecosystem and landform representations within the NWPS should be greater than 1,000 acres in size to typify the dynamics of an ecosystem."

Our analysis followed these guidelines. In several instances, the Bailey-Kuchler classification system was refined to reflect the presence of unique ecosystems or landforms within WSAs.

ID NUMBER: 0100/0105

NAME: Judith Bishop/Jim Fish - New Mexico BLM Wilderness Coalition

COMMENT: "The BLM found Windmill Inventory Unit unsuitable for wilderness, seemingly because of intrusive range improvement and lack of outstanding opportunities for solitude (due to lack of vegetative screening) Wilderness as an adjunct to the Rio Grande Wild River was not discussed in BLM documents."

RESPONSE: The Windmill intensive inventory unit (NM-010-033) was released from further wilderness consideration in the New Mexico Study Area Decisions (November 1980). There was no appeals received on this decision. The unit was dropped from further wilderness consideration due to lack of outstanding opportunities for solitude and primitive or unconfined recreation because of limitation imposed by topography and vegetation. The naturalness of the area was also considered to be significantly impacted.

The Taos RA in which the Windmill inventory unit was located has prepared a Draft RMP and EIS that identifies and analyzes the future options for management of the public lands in the Taos RA. The Windmill area is being considered in the RMP for special management attention.

ID NUMBER: 0100/0105

NAME: Judith Bishop/Jim Fish - New Mexico BLM Wilderness Coalition

COMMENT: "The Coalition proposal contains all of the roadless BLM land in the two WSAs; 1,080 acres of State land which lies between Techado Mesa Unit 011 and Pinyon WSA; 120 acres of waterless private inholding within Unit 011; and approximately 3,280 acres of waterless private land abutting the southern part of Unit 012. Although not critical to a viable wilderness unit, the latter acquisitions would ensure the inclusion of all of Techado Mesa and would square the southern boundary."

RESPONSE: The Techado Mesa acreage was dropped from further wilderness study review in the July 1979 New Mexico Wilderness Review; Initial Inventory Decision. The BLM analysis states: Techado Mesa, NM-020-011, 012, 19,000 acres: Both units offer abundant recreation opportunities. The terrain is variable, but there are no very unique features. The units are split by a well-used and defined road. The opportunities for solitude are good, but are not outstanding. Recreation opportunities are also good, but neither are they outstanding. Also, both areas are moderately accessible to vehicles from all sides except the south.

These lands can be reconsidered for wilderness potential through the RMP process. If at some future date, the 1,080 acres of State land and/or the 3,400 acres of private lands were to be acquired, these lands could also be formally studied for wilderness potential. Depending on the results of the study, BLM would make a recommendation either in favor of or opposed to wilderness designation.

ID NUMBER: 0100/0105

NAME: Judith Bishop/Jim Fish - New Mexico BLM Wilderness Coalition

COMMENT: "There appears to be no reason why San Luis was not included as BLM Wilderness Inventory Unit in the beginning of the BLM review process."

RESPONSE: This region was assessed during Initial Inventory (1979) as being roaded which produced two contiguous areas less than 5,000 acres. It was released from further wilderness study at this time. There were no appeals received on this decision.

ID NUMBER: 0100/0105

NAME: Judith Bishop/Jim Fish - New Mexico BLM Wilderness Coalition

COMMENT: "The original Redrock Inventory Unit contained 14,460 acres, but was divided into two parts by a half-section tract of private land that was missed during inventory. The southern portion of Redrock was subsequently dropped because of a lack of wilderness characteristics. The BLM then dropped the northern portion because its area is less than 5,000 acres. This decision was appealed by conservationists and by the New Mexico Natural History Institute on the grounds that the area had sufficient size to be managed for its wilderness qualities. The IBLA upheld the BLM decision. The BLM did agree that the Middle Box has unique values, and protected 920 acres from disturbing activities by designation of an Area of Critical Environmental Concern (ACEC).

The Coalition feels that neither the acreage included nor the degree of protection provided by ACEC designation is sufficient."

RESPONSE: The decision to designate a 647-acre Gila River Middle Box Wildlife Area ACEC included in the Las Cruces/Lordsburg Final Management Framework Plan Amendment/EIS was protested by one party, the Phelps Dodge Corporation. The Phelps-Dodge Corporation protest opposed the designation because of restrictions on locatable mineral entry into the area. The BLM Director upheld the State Director's decision to designate the ACEC. The designation was finalized in the Record of Decision (May 1984).

ID NUMBER: 0100/0105

NAME: Judith Bishop/Jim Fish - New Mexico BLM Wilderness Coalition

COMMENT: "In addition to the Redrock Inventory Unit discussed above, the adjacent BLM lands include the Grapevine Spring Inventory Unit to the northwest of the Forest Service area. Although this unit was originally recommended for WSA status, it was later dropped by the BLM on the basis of the impact on naturalness of a road in Little Brushy Canyon and 3 additional cement water tanks missed during the initial inventory

The Coalition proposal combines Grapevine Spring, Redrock, and the Forest Service area between them to form a large, diverse, roadless wilderness complex. The resulting Middle Gila Box Wilderness would be a significant addition to the National Wilderness Preservation System."

RESPONSE: The Gila Middle Box portion of the Redrock intensive inventory unit and the Grapevine Spring intensive inventory unit (NM-030-028) were released from further wilderness consideration in the New Mexico Wilderness Study Area Decisions (November 1980).

The decision to drop the Gila Middle Box was appealed by the New Mexico Natural History Institute (NMNHI), Desert Wilderness Coalition, and Phillip Allen. In the decisions on these appeals (NMNHI, IBLA 81-1065, December 29, 1983; Allen and Desert Wilderness Coalition IBLA 81-1068, 81-1071, December 5, 1983), the Interior Board of Land Appeals (IBLA) noted that the November 1980 WSA decisions were made pursuant to Section 603(a) of FLPMA. Referencing a previous decision [Tri-County Cattlemen's Association, 60 IBLA 305, 314 (1981)] that concluded that an area of less than 5,000 acres of public land cannot qualify as a WSA under Section 603(a), the IBLA affirmed BLM's decision dropping the Gila Middle Box. In response to Allen's appeal, IBLA added that the fact that an area adjoins a RARE II area does not alter the size limitation.

The decision to drop the Grapevine Spring unit was based on the area's lack of naturalness. Five earth tanks, one mile of pipeline, two drinking tubs, three cement dams, and two jeep trails were identified within the 5,200-acre unit. If the road in Little Brushy Canyon cut 1/4 mile farther south, it would divide the unit in half. There were no appeals filed on the November 1980 decision to drop this unit.

The New Mexico Wilderness Act of 1980 (P.L. 96-550) designated certain USFS land as wilderness and other lands as WSAs. Other lands included in the second roadless area review and evaluation (RARE II) were addressed in Section 104 of the Act. Section 104 states that RARE II adequately considered the wilderness suitability of these other lands, including RARE II Area 3-152, for the purposes of the USFS's required initial land management plans.

Should the USFS decide to study the RARE II area 3-152 during a future planning cycle, BLM could reconsider the wilderness values of the Gila Middle Box or Grapevine Spring pursuant to Section 202 of FLPMA.

ID NUMBER: 0100/0105

NAME: Judith Bishop/Jim Fish - New Mexico BLM Wilderness Coalition

COMMENT: "Although BLM did not designate Granite Gap as a WSA, the Coalition continues to maintain that the heart of the area meets all of the wilderness criteria and should be recommended suitable for wilderness . . . the proposed Granite Gap Wilderness is a well-configured area with outstanding wilderness characteristics. Acquisition of the State land, however, is critical."

RESPONSE: The Granite Gap intensive inventory unit (NM-030-006) was released from further wilderness consideration in the New Mexico Wilderness Study Area Decisions (November 1980). There were no appeals received on this decision.

The decision to drop Granite Gap was based on the lack of naturalness and outstanding opportunities for solitude and primitive recreation.

Seven dirt tanks, 2 windmills, 2 pipelines, numerous mining prospects (in the southern part of the unit), and 13 jeep trails (totaling 19 miles) were identified in the 20,044-acre roadless part of the unit. The Intensive Inventory Report (January 1980) concluded that these imprints cumulatively and negatively impacted the area's naturalness because of their number and locations.

The unit was described as lacking outstanding opportunities for solitude because of limited vegetative and topographic screening and a lack of topographic integrity attributed to the unit's boundary configuration. Public land in this part of the Peloncillo Mountains encompasses mostly sideslopes with the more rugged mountainous areas in State ownership. The lack of outstanding opportunities for primitive recreation was attributed to the numbers and locations of intrusions and the unit's boundary configurations.

ID NUMBER: 0100/0105

NAME: Judith Bishop/Jim Fish - New Mexico BLM Wilderness Coalition

COMMENT: "The Coalition has identified 5,020 acres that are suitable for inclusion into the National Wilderness Preservation System The BLM area is smaller partly because BLM excluded alluvial fan acreage The Coalition, on the other hand, believes such topography and habitat is just as much wilderness as foothills and

RESPONSE: By State Director decision in the New Mexico Wilderness Study Area Decisions (November 1980), the western boundary of the Sacramento Escarpment WSA was placed along a legal boundary rather than a topographic line. This change was made in response to public comments. Also, as a result of public comment, boundary adjustments were made to exclude dirt tanks, jeep trails, pipelines, and a windmill.

As originally designated, the Sacramento Escarpment WSA was to be studied in conjunction with the adjacent and contiguous USFS RARE II Area No. 3-072. The New Mexico Wilderness Bill of 1982 removed the adjacent Forest Service area from further consideration as wilderness. Since the Sacramento Escarpment WSA did not meet the wilderness criteria on its own, it too was dropped from further study.

ID NUMBER: 0112

NAME: John S. Hingtgen

COMMENT: "I found that the price of copper that was used was quite a bit higher than the current value, and so it made the value of the minerals that could not be mined under Wilderness designation appear to be much greater than it actually is."

RESPONSE: The estimated total present worth of copper resources appearing in Appendix A was derived using a 75¢ per pound price for copper metal. This price represents a rounded average of the price of domestic refinery copper cathodes for the 10-year period prior to 1985 when the estimate was derived. During that period, the price of copper fluctuated from 63.5¢ to 101.4¢ per pound. The current prices for copper have been ranging from 65¢ to 70¢ per pound. We believe that the 10-year average provides a more representative estimate of future copper prices since copper prices have tended to significantly fluctuate over the recent past. It should also be noted that the relative differences between alternatives are more important to the analysis than the individual values.

ID NUMBER: 0112

NAME: John S. Hingtgen

COMMENT: "Next I would like to move to another flaw in the analysis. That is the failure to adequately consider and protect ecosystem diversity. By this, I mean diversity of plant communities, communities of life that exist on these areas, and the rarity, the relative rarity, of the communities.

The BLM used the Bailey-Kuchler landform and potential natural vegetation system to evaluate community diversity. The Bailey-Kuchler system is an extremely broad-brush approach that does not adequately give a picture of the detailed community situation that exists. By using such a broad-brush approach, the agency is not able to identify rare communities, and protecting rare communities is a value that we think wilderness deserves and one that is very important to the long-term health of society in general, for many, many reasons.

Even in some cases where the extremely broad-brush Bailey-Kuchler system did identify some unique communities, in some cases, the agency failed to even recommend them. A notable case there is Alamo Huecos, where even Bailey-Kuchler identified the ecosystem as neither currently representative wilderness nor being studied by any other agency."

RESPONSE: The BLM Wilderness Study Policy: Policies, Criteria, and Guidelines for Conducting Wilderness Studies on Public Lands states:

"The Bailey-Kuchler system was selected because it is a land classification system which facilitates planning at the National level and provides a broad synthesis of current knowledge about the ecosystem geography of the country. It also serves as a useful reference for those who desire an overview on a comparable basis of ecosystem and potential NWPS units. Land areas providing ecosystem and landform representations within the NWPS should be greater than 1,000 acres in size to typify the dynamics of an ecosystem."

Our analysis followed these guidelines. In several instances, the Bailey-Kuchler classification system was refined to reflect the presence of unique ecosystems or landforms within WSAs.

The WSAs in the New Mexico Statewide Wilderness Study are representative of 22 individual ecosystems found in New Mexico. In total, 19 of those ecosystems are currently not part of the NWPS. If the BLM proposed action were implemented, 17 of those ecosystems that are not currently in the NWPS would be added to the system. In the case of the Alamo Hueco Mountains WSA, we felt that due to the land status in the area, we could not ensure that we would be able to effectively manage this area over the long-term.

ID NUMBER: 0117

NAME: Jim Norton

COMMENT: "This has been covered already this evening by Jim Fish, and I will not go into much detail on this, but I would like to add that the BLM did fail in the Overview Analysis, Volume I of the Draft Study, to recognize a distinction between mining claims that were filed before and those that were filed after the passage of FLPMA, the Federal Land Policy Management Act of 1976, which mandated this whole study process.

The right to develop a claim that was filed before FLPMA does exist and can take place with impairment to wilderness values, as long as there is not undue or unnecessary degradation, while a post-FLPMA claim, one that was filed after FLPMA was passed, can only be developed under the nonimpairment standard of BLM's IMP, Interim Management Policy. There is a much stricter standard for the way that a claim can be developed that was filed after the passage of the law that mandated this study."

RESPONSE: For both the pre-FLPMA and post-FLPMA valid mining claims, the locatable mineral operator's rights under Interim Wilderness Management are different than those rights under Wilderness Management. Interim Wilderness Management procedures, including regulations (43 CFR 3802), only concern lands being studied for potential wilderness designation. The EIS focuses on impacts associated with designating areas as wilderness or not designating areas as wilderness and is not analyzing impacts under Interim Wilderness Management.

All claimants locating within lands designated as wilderness areas prior to mineral closure enjoy the right to develop their claims to their fullest potential as long as a valid discovery was made prior to the mineral closure. Operations in wilderness areas must conform to Section 4(d)(3) of the 1964 Wilderness Act as specified in Section 603 of the FLPMA of 1976. Thus, claimants with properly located and maintained claims, which are in conformance with regulations in 43 CFR 8560.4-6 and 43 CFR 3809, may exercise all actions reasonably incident to mining to develop their claims even if wilderness values are impaired. This right is in no way dependent upon whether the claim was located prior to or after the passage of FLPMA. Thus, there is no reason to discuss pre-FLPMA vs. post-FLPMA mining claims when considering impacts associated with designating or not designating the subject lands as wilderness.

ID NUMBER: 0148

NAME: Ben Zerby

COMMENT: "The wilderness study does not mention proposals in the S. Rio Grande Plan Amendment which would add considerable acreage from the State of N.M., military withdrawal relinquishments, and exchanges with private parties in the Organ Mountain WSA. These lands should be included in the Final Wilderness Study as proposals for additional wilderness when these exchanges have been completed. Similar mention should be made of the proposed exchanges between the State and BLM as they affect lands in the Aden Lava Flow and Mt. Riley/W. Potrillo WSAs."

RESPONSE: The Southern Rio Grande Plan Amendment identifies acreages that could be used for land exchanges. Other BLM land use plans also identify acreages for exchange. It is projected that BLM will acquire the State inholdings within all WSAs that are designated wilderness.

ID NUMBER: 0148

NAME: Ben Zerby

COMMENT: "1. In State Director Chas W. Luscher's 11/15/85 analysis of public comments on the previous Wilderness Draft EIS, it was reported on page 2 that 73% of the respondents favored the New Mexico Wilderness Coalition proposal which was named 'Alternative W.' Since such a large majority of respondents favored Alt. W it would seem necessary that the BLM should include the Coalition proposal as an alternative in the revised Draft EIS."

RESPONSE: To analyze all reasonable alternatives, BLM followed a process to screen out areas lacking mandatory wilderness characteristics. This process is known as the BLM wilderness inventory process. This process included public involvement and procedures for appeals. At the completion of the inventory of the 12.9 million acres of BLM managed lands in New Mexico, approximately 1.2 million acres were identified as having mandatory wilderness characteristics. These areas became WSAs and they were studied in an EIS. Approximately 950,000 acres have been studied as part of the New Mexico Statewide Wilderness Study and the maximum wilderness alternative is the All Wilderness Alternative. The Earth First! proposal as well as the New Mexico Wilderness Coalition proposal recommends lands outside the BLM wilderness study. Because these lands are not managed by BLM or were screened out during the inventory, these lands were not included in the study. If, at some future date, BLM acquires additional lands and these lands have potential for wilderness designation, they would be studied by BLM to determine their suitability for wilderness designation. Depending upon the result of that study, BLM would make a recommendation for wilderness designation.

ID NUMBER: 0157

NAME: Sandra McKenna

COMMENT: "Can our government truly support more wilderness area? And who is going to police the wilderness area? Will this be one more area that the rancher is called on to support a government regulation? What about the border patrol and DEA [Drug Enforcement Agency], will they be given a special permission each time they need to go into a wilderness area? Will special interests groups have to review each and every request? God help us if there is a big drug deal going down within the area."

RESPONSE: In 1976, our elected officials passed FLPMA. This law requires the BLM to inventory, study, and report to Congress its recommendations as to the suitability and nonsuitability of areas identified as having wilderness characteristics. Only Congress can designate an area as wilderness. Once designated, management responsibility, including law enforcement, rests with the BLM. Ranchers operating in designated wilderness areas will be required to comply with the provisions of the BLM Wilderness Management Policy. The Congressional guidelines for grazing management in wilderness are reprinted verbatim in the BLM Wilderness Management Policy.

Copies of this policy are available at any BLM Office in New Mexico. In the event of an emergency, the BLM Wilderness Management Policy states that "Motorized equipment necessary to meet temporary emergencies involving violations of criminal law and/or including the pursuit of fugitives may be approved by the District Manager."

ID NUMBER: 0249, 0286 through 0304, 0306 through 0470, 0581, and
0647 through 0655 (Form letter - 194 copies submitted.)

NAME: New Mexico Farm and Livestock Association

COMMENT: "In addition, I find the present DEIS/NMSWS [New Mexico Statewide Wilderness Study] unacceptable because of the following reasons: (1) The failure of the BLM to include in the DEIS/NMSWS an analysis and accounting of projected economic costs of wilderness management and the possible environmental effects of these costs on the future management of nonwilderness BLM lands; (2) The BLM's apparent disregard for the conservation requirements of the Federal Land Policy and Management Act (FLPMA) when discussing and analyzing the environmental impacts of 'no wilderness' designation. The BLM consistently states that 'no wilderness' designation of WSAs will result in the disruption, destruction, or deterioration of wildlife habitat, soils, vegetation, and archaeological values. If the BLM was doing its job and following FLPMA, I do not believe these conclusions on the effects of 'no wilderness' designation would be valid. It appears to me that the BLM's argument for resource deterioration given 'no wilderness' designation is inconsistent with FLPMA and the proper role of the BLM in land management. It also invalidates the DEIS/NMSWS in my opinion; and (3) The failure of the BLM to give full attention to alternative management designations such as Areas of Critical Environmental Concern in the DEIS/NMSWS. These designations, I believe, could be very important if the BLM adhered to the guidelines of FLPMA and their legislated stewardship role."

RESPONSE: Management costs are not an environmental issue and, therefore, projected management costs are not analyzed in the EIS. Also, there will be no environmental effects resulting from wilderness management costs on nonwilderness BLM lands. This is based upon the BLM budgetary system. Additionally, it should be noted that wilderness management costs will replace current costs associated with interim management of WSAs and costs associated with wilderness studies.

BLM is a multiple use agency. Unless an area is under special management, uses over the long-term may result in road construction and minerals exploration. Population increases are also expected to result in increased off-road vehicle use over the long-term. These activities are projected based upon the mineral potential in a WSA, proposals, and trends. Although these surface disturbing activities are consistent with FLPMA, they would degrade wilderness naturalness and wilderness values. It is this degradation or loss that is described in the discussion of impacts to wilderness values under the No Wilderness Alternative.

BLM does not use the ACEC designation as a substitute for wilderness designation. The ACEC designation is an administrative designation that BLM considers in the RMPs. The wilderness EIS is a legislative EIS that is designed to present Congress with information and analysis of wilderness designation and nonwilderness designation of the WSAs.

ID NUMBER: 0249, 0286 through 0304, 0306 through 0470, 0581, and
0647 through 0655 (Form letter - 194 copies submitted.)

NAME: New Mexico Farm and Livestock Association

COMMENT: "The DEIS/NMSWS does not adequately address the status of range improvements on state lands which may, in the future, be swapped for BLM lands and included in WSAs in Southern New Mexico."

RESPONSE: Projects on State land were not inventoried or considered in the analysis since State land is not subject to wilderness inventory or available for wilderness designation. As non-Federal inholdings in a WSA, reasonable access would be granted by BLM for access to rangeland developments or for other uses on the State land. Should BLM acquire these lands at some future date, their wilderness values would be assessed, and in all likelihood those that are totally surrounded by WSAs or designated wilderness would receive that same designation and be considered part of the WSA or wilderness, as the case may be. In that case, rangeland developments on these acquired State sections would be considered in the same regard as those on other public land within the WSA or wilderness. These developments could continue to be used and maintained subject to restrictions to preserve the area's wilderness values. Where practical alternatives do not exist, maintenance or other activities may be accomplished through the occasional use of motorized equipment. The impacts of wilderness designation on these rangeland improvements would be the same as impacts on rangeland improvements on public land included in the WSA.

ID NUMBER: 0249, 0286 through 0304, 0306 through 0470, 0581, and
0647 through 0655 (Form letter - 194 copies submitted.)

NAME: New Mexico Farm and Livestock Association

COMMENT: "The point must also be made that the cost of maintaining and policing WSAs close to the Mexican border will be prohibitive. Also, wilderness classification will limit use of these WSAs by all citizens and possibly turn these areas (which are close to the border) into a haven for drug dealers and gun runners."

RESPONSE: Currently, the cost of managing WSAs close to the Mexican border has been comparable to the cost of managing WSAs in the rest of the State. It is expected that the trend would continue for any areas that may be designated wilderness. The fact that an area is located near the Mexican border has not increased management costs.

Wilderness designation will limit or prohibit certain uses such as motorized vehicles within the WSAs, but the wilderness is open to all persons who would use it according to the guidelines and prescriptions for wilderness areas, that is, access by nonmotorized or nonmechanized access.

Law enforcement would be carried out within wilderness areas. The BLM Wilderness Management Policy provides that "motorized equipment necessary to meet temporary emergencies involving violations of criminal law and/or including the pursuit of fugitives may be approved by the District Manager."

ID NUMBER: 0323

NAME: Larry Foster - Corralitos Venture

COMMENT: "It must be noted that the setting aside of huge blocks of land with no vehicle entry possible on a daily basis by the public or the rancher will create a safe haven in the Southern part of this State for the entry and establishment of camps of illegal aliens. Such activities have been documented in our files and will occur wherever large tracts of isolated land remains inaccessible by vehicle. The provision that all entry into WSAs must be on foot is a perfect setting for such illegal entry to occur because the majority of aliens crossing would blend in very well with legal residents crossing and roaming about the WSA on foot. Without established, maintained roads, the Border Patrol would have to go off road to check each and every person crossing the WSA or use low level aircraft surveillance of each individual in the WSA. This definite need for entry and confrontations by the Border Patrol officers would destroy the entire concept of the WSAs by placing individuals inside the WSAs under direct scrutiny and questioning by Federal officers. How could anyone expect to find 'unconfined solitude' in such a setting?"

RESPONSE: We have no documented evidence that any of the BLM WSAs are now, or have have been in the past, used for the entry and establishment of camps of illegal aliens. However, in the event this were to occur, the BLM Wilderness Management Policy states that "Motorized equipment necessary to meet temporary emergencies involving violations of criminal law and/or including the pursuit of fugitives may be approved by the District Manager." There is a 2,000-foot ceiling on flights over wilderness, except for the military and in the case of bona fide emergencies. This restriction was established by the Federal Aviation Administration.

ID NUMBER: 0323

NAME: Larry Foster - Corralitos Venture

COMMENT: "What is the legal status of hang-gliders on the WSAs?"

RESPONSE: The use of hang-gliders in wilderness is expressly prohibited by the regulations 43 CFR 8560, Management of Designated Wilderness Areas.

ID NUMBER: 0323

NAME: Larry Foster - Corralitos Venture

COMMENT: "Can an individual be cited for trespassing with a vehicle on a WSA if he has legally entered the WSA from off road locations on adjacent BLM lands and no posted restrictions were visible to him when he entered the WSA?"

RESPONSE: It is our policy to post all points of entry into the wilderness areas once they are designated. We have accomplished this for the Bisti and De-na-zin Wilderness Areas in the San Juan Basin and will continue this for any additional areas designated in the future. If motor vehicles are discovered inside a wilderness without a permit for such use, we will issue a citation to the violator. Currently, this type of violation carries with it a \$50.00 penalty.

ID NUMBER: 0323

NAME: Larry Foster - Corralitos Venture

COMMENT: "How is the rancher going to compete economically with his ranching competitors who are driving vehicles? Has the grazing permit fee been reduced to compensate the rancher who is restricted from using a vehicle? Has the BLM instituted a study to determine the cost to the affected rancher of this policy change? How can a rancher who is allowed only a certain number of preordained vehicular maintenance visits per year possibly keep up with fence cutting and vandalism going on every day? The fences must be kept in repair surrounding federal grazing permits, don't they?"

RESPONSE: Section 4(d)(4)(2) of the Wilderness Act provides for continued livestock grazing where established prior to designating the area as wilderness. The BLM Wilderness Management Policy states that the objective of livestock management in wilderness is:

"Utilize the forage resource in conformity with established wilderness objectives for each area and the BLM grazing regulations (43 CFR 4100), and through practical, reasonable, and uniform application of the congressional guidelines and policy."

The congressional guidelines are reprinted verbatim in the BLM Wilderness Management Policy; copies are available at any BLM Office in New Mexico. In reference to the maintenance of support facilities and the use of motorized equipment, the congressional guidelines state:

"Where practical alternatives do not exist, maintenance or other activities may be accomplished through the occasional use of motorized equipment. This may include, for example, the use of backhoes to maintain stock ponds, pickup trucks for major fence repairs, or specialized equipment to repair stock watering facilities.

Such occasional use of motorized equipment should be expressly authorized in the grazing permits for the area involved. The use of motorized equipment should be based on a rule of practical necessity and reasonableness. For example, motorized equipment need not be allowed for the placement of salt or other activities where such activities can reasonably and practically be accomplished on horseback or foot."

The grazing permit fee within wilderness is the same as the fee for lands outside of wilderness. Our analysis found that the rancher will be inconvenienced by the restrictions on motorized vehicles, but that the additional costs for operating under the restrictions would be offset by the reduced vandalism anticipated as a result of keeping other motor vehicle uses out of the area.

ID NUMBER: 0323

NAME: Larry Foster - Corralitos Venture

COMMENT: "These huge blocks of isolated untraveled lands would also drastically increase the flood of illegal drugs flowing in our Southern Borders, not even to mention the distinct possibility of cultivation, staging, and shipment of these drugs from isolated areas in the WSAs."

RESPONSE: Currently, we have no reason to believe that the New Mexico WSAs are being used in illegal drug operations. In the event such a situation were to arise, the BLM Wilderness Management Policy allows for the use of motorized equipment necessary to meet temporary emergencies involving violations of criminal law and/or including the pursuit of fugitives. The BLM District Manager has the authority to approve such vehicle use.

ID NUMBER: 0529

NAME: Peter Mocho - New Mexico Cattlegrowers Association

COMMENT: "Earlier this year the U.S. District Court Judge John Kane in Denver ruled that federal wilderness in Colorado carries an implicit water right (Sierra Club v. Block). Although Kane ruled specifically on Colorado wilderness, his decision could set a precedent for wilderness water rights in other states. Unless this decision is overruled by the courts or by Congress, wilderness areas will be granted a new reserved water right in direct conflict with water rights established under state water laws. Since the court ruling did not differentiate between surface water or ground water, the DEIS has omitted evaluation on the number one mineral issue in the west. Further, no mention of the resource was made in the document. By excluding waters' environmental and socioeconomic impacts from this study, it must be considered incomplete."

RESPONSE: Water rights were not identified as an environmental issue in this EIS because BLM considers this issue a national legislative issue that will be addressed in wilderness legislation. Also, for New Mexico, legislative solutions to water rights are not expected to affect BLM wilderness in New Mexico. This is because only two BLM WSAs in the State (Rio Chama and Gila Lower Box) have streams or rivers that flow within the WSA boundaries. The Rio Chama flows through the Rio Chama WSA; however, the USFS Chama River Canyon Wilderness Area is downstream and contiguous to the Rio Chama WSA, and any water rights issues relating to wilderness would exist regardless of the BLM wilderness designation of the Rio Chama WSA. The Gila River flows through the Gila Lower Box WSA. The existing flow provides irrigation water to downstream users. If the area is designated as wilderness, assertion of water rights by the Federal Government is not expected. However, even if these rights were exercised, they would be junior rights subordinate to existing water rights.

The water rights issue also extends to groundwater. Groundwater is administered by the State Engineer and no potential conflicts or problems are anticipated with groundwater rights and wilderness designation.

ID NUMBER: 0529

NAME: Peter Mocho - New Mexico Cattlegrowers Association

COMMENT: "Analysis of the management costs resulting from wilderness designation is omitted from the DEIS/NMSWS on the assumption that the 'BLM will have adequate funds and personnel to manage areas designated wilderness' (DEIS/NMSWS, Vol. I, p. 4-1). Legislative designation will, indeed, obligate Congress to provide funds for the management and protection of newly created wilderness areas. In our opinion, this does not relieve the Bureau of Land Management of the obligation to provide a full accounting of costs anticipated in the implementation and long-term continuation of that agency's recommended wilderness plan. This also has a direct bearing on the environmental impact additional costs may have on future management of the majority of BLM lands which will not be designated wilderness. Although the BLM does not consider taxpayer dollars to be a limiting factor in wilderness management, many people do."

RESPONSE: Management costs are not an environmental issue, and therefore, projected management costs are not analyzed in the EIS. Also, there will be no environmental effects resulting from wilderness management costs on nonwilderness BLM lands. This is based upon the BLM budgetary system. Additionally, it should be noted that wilderness management costs will replace current costs associated with interim management of WSAs and costs associated with wilderness studies.

ID NUMBER: 0529

NAME: Peter Mocho - New Mexico Cattlegrowers Association

COMMENT: "We do not agree with BLM's contention (repeated throughout the DEIS/NMSWS) that without wilderness designation, specific WSAs must inevitably suffer disruption or destruction of wildlife habitat, deterioration of cultural resources, and degradation of vegetation and soils. We interpret Section 102(a)(8), of the Federal Land Policy Management Act to mean the BLM will and must manage all land and air resources within its jurisdiction (regardless of designation) in a manner that is nondegrading to the environment and its component parts. Despite this clear mandate, the BLM makes it clear throughout the document that unless wilderness designation is granted to a WSA, the resource will deteriorate and even be destroyed."

RESPONSE: BLM is a multiple use agency. Unless an area is under special management, uses over the long-term may result in road construction and minerals exploration. These activities are projected based upon the mineral potential in a WSA, proposals, and trends. Although these surface disturbing activities are consistent with FLPMA, they would degrade wilderness naturalness and wilderness values. It is this degradation or loss that is described in the discussion of impacts to wilderness values under the No Wilderness Alternative.

ID NUMBER: 0599

NAME: Rodney Greeno

COMMENT: "Why doesn't BLM address the ecosystems that are actually in existence? BLM should at least supplement Bailey-Kuchler with another measure of diversity as BLM Oregon did in its Statewide EIS."

RESPONSE: The BLM Wilderness Study Policy: Policies, Criteria, and Guidelines for Conducting Wilderness Studies on Public Lands states:

"The Bailey-Kuchler system was selected because it is a land classification system which facilitates planning at the National level and provides a broad synthesis of current knowledge about the ecosystem geography of the country. It also serves as a useful reference for those who desire an overview on a comparable basis of ecosystem and potential NWPS units. Land areas providing ecosystem and landform representations within the NWPS should be greater than 1,000 acres in size to typify the dynamics of an ecosystem."

Our analysis followed these guidelines. In several instances, the Bailey-Kuchler classification system was refined to reflect the presence of unique ecosystems or landforms within WSAs.

ID NUMBER: 0662

NAME: Neil Allen - Amoco Production Company

COMMENT: "Our proposal to eliminate high and moderate potential areas from the proposed action was based upon a review of each of the mineral potential charts applicable to specific WSAs. The Mudgetts and Culp Canyon study areas, shown with high and moderate potential respectively were not shown in the chart above since the proposed action does not recommend their inclusion as wilderness. It appears the difference between the number presented above and that calculated from Table 4-7 could be the source of data used in assessing potential. In any event, we feel justification exists to eliminate high and moderate potential as presented above."

RESPONSE: Oil and gas potential was considered as one of many factors in developing wilderness suitability recommendations. To automatically recommend an area as nonsuitable for wilderness solely on oil and gas potential would not take into consideration all the factors required by the BLM Wilderness Study Policy. Nevertheless, approximately 1 percent of the lands in New Mexico having a high or moderate potential for oil and gas have been recommended as suitable for wilderness designation.

ID NUMBER: 0674

NAME: Celia Lindblom - Scandinavian Designs

COMMENT: "It is alarming the BLM revised EIS recommends only 28 of the qualifying areas for wilderness designation. In many cases, BLM's comments (in the revised EIS) that certain areas have 'marginal wilderness values' or 'low quality naturalness' are in direct conflict with the agency's own previous determination that each area under consideration already meets the Wilderness Act's strict standards for wilderness value. There seems to be a bias against many of the areas that do not contain forest ecosystems. Forests are not the only criteria for wilderness designation. Many of our WSAs should be included because of the beauty, rarity, and fragility of desert-like ecosystems."

RESPONSE: While the WSAs entering the wilderness study process possess the mandatory wilderness characteristics, the BLM Wilderness Study Policy: Policies, Criteria, and Guidelines for Conducting Wilderness Studies on Public Lands directs us to assess the quality of those characteristics. In part, the policy states:

"One WSA may contain outstanding opportunities for both solitude and primitive recreation, while another area may possess outstanding opportunities only for solitude; one WSA's outstanding opportunities for solitude may be superior to those in another WSA. The size of a particular WSA, whether it is barely 5,000 acres or well over 200,000 acres, may affect its suitability for wilderness as well.

The degree of naturalness may also vary between areas, depending on the presence of incompatible uses, and on the number of vehicle ways and other imprints of man."

The evaluation of each area's wilderness values is contained in that area's WAR.

The WSAs in the New Mexico Statewide Wilderness Study are representative of 22 individual ecosystems found in New Mexico. In total, 19 of those ecosystems are currently not part of the NWPS. If the BLM proposed action were implemented, 17 of those ecosystems that are not currently in the NWPS would be added to the system. Clearly, as shown through our recommendations, forested mountains were not the only areas we considered suitable for wilderness designation.

ID NUMBER: 0677

NAME: John Picaro

COMMENT: "I also question how the agency decides upon wilderness values or areas. What is the criteria? Does it have to have high mountain peaks to be wilderness?"

RESPONSE: The BLM is using the definition of wilderness contained in Section 2(c) of the Wilderness Act of 1964. In summary, Congress has defined wilderness as an area that:

"(1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, education, scenic, or historical value."

The New Mexico wilderness study criteria, as shown in Volume 1 of the New Mexico Statewide Wilderness Study, page 1-6, is as follows:

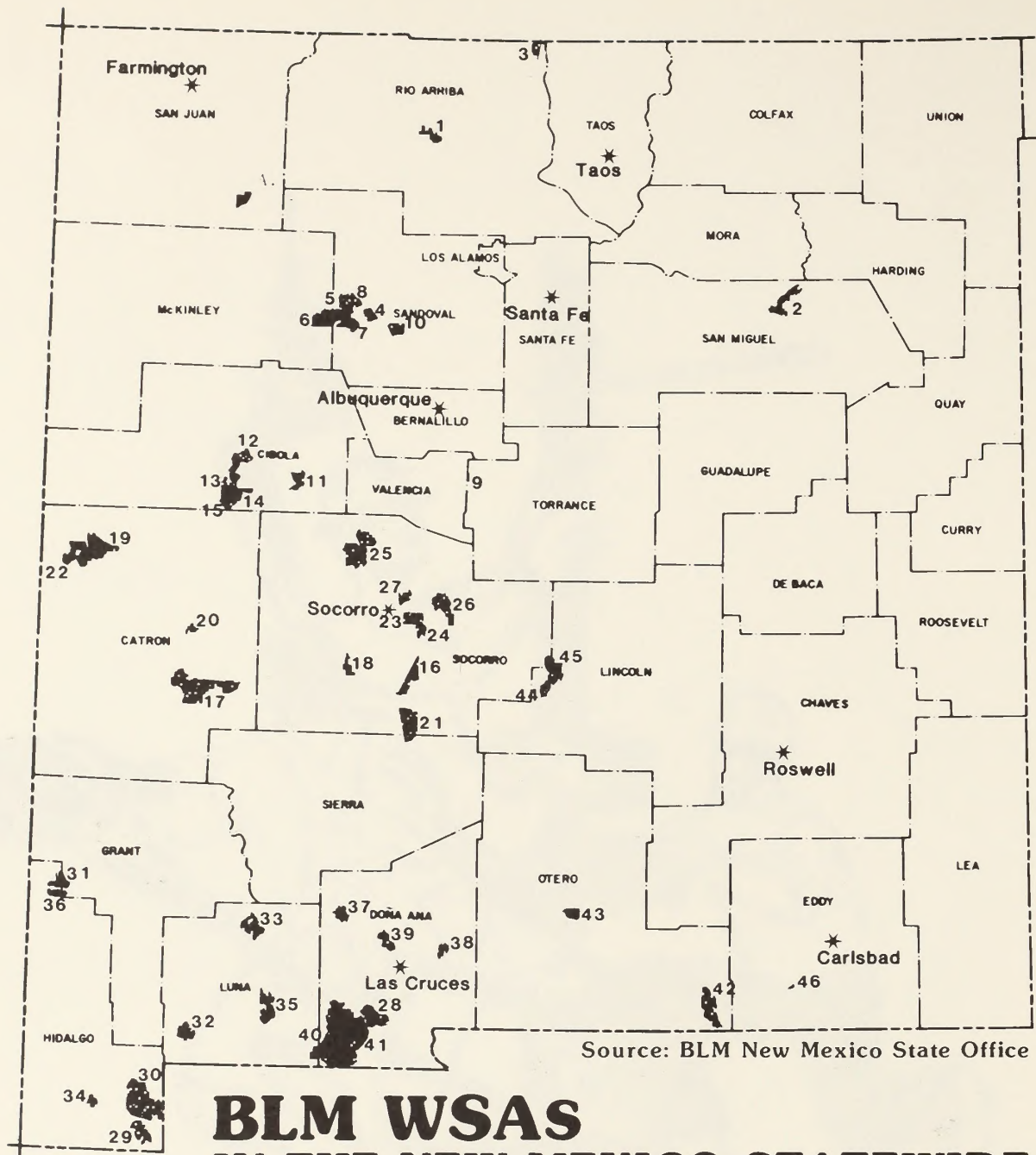
"To be recommended as suitable for wilderness designation, an area should possess wilderness values and multiple resource benefits capable of balancing the benefits of other resource values and uses which could be foregone due to wilderness designation. In addition, an area recommended as suitable for wilderness designation must be capable of being managed as wilderness over the long-term."

The landforms under study in New Mexico contain lava flows, forested mountains, river canyons, and the more typical desert mountains and lowlands of the Southwest. The proposed action recommends wilderness designation that include all these landforms.



APPENDIX A

Supplemental Mineral Resource Information



BLM WSAS IN THE NEW MEXICO STATEWIDE WILDERNESS STUDY

ALBUQUERQUE DISTRICT

1. Rio Chama
2. Sabinoso
3. San Antonio
4. Cabezón
5. Empedrado
6. Ignacio Chavez
7. Chamisa
8. La Lena
9. Manzano
10. Ojito
11. Petaca Pinta
12. Rimrock
13. Sand Canyon
14. Little Rimrock
15. Pinyon
- A. Ah-shi-sle-pah

LAS CRUCES DISTRICT

16. Antelope
17. Continental Divide
18. Devil's Backbone
19. Eagle Peak
20. Horse Mountain
21. Jornada Del Muerto
22. Mesita Blanca
23. Presilla
24. Sierra de las Canas
25. Sierra Ladrones
26. Stallion
27. Veranito
28. Aden Lava Flow
29. Alamo Hueco Mtns.
30. Big Hatchet Mtns.
31. Blue Creek

32. Cedar Mtns.
33. Cooke's Range
34. Cowboy Spring
35. Florida Mtns.
36. Gila Lower Box
37. Las Uvas Mtns.
38. Organ Mtns.
39. Robledo Mtns.
40. West Potrillo Mtns.
41. and Mt. Riley
42. Brokeoff Mtns.
43. Culp Canyon

ROSWELL DISTRICT

44. Carrizozo Lava Flow
45. Little Black Peak
46. Mudgetts

APPENDIX A

SUPPLEMENTAL MINERAL RESOURCE INFORMATION

This appendix includes additional information concerning the potential impacts of wilderness designation on exploration and development of mineral resources. Supply and demand relationships of relevant mineral commodities are summarized to help identify the existing situation. Restrictions associated with the exploration and development of mining claims, mineral leases, and private mineral rights under wilderness management are addressed. A site-specific summary of impacts by alternative as well as documentation concerning the estimated value of affected copper resources are also included.

RESTRICTIONS IMPOSED ON MINERAL ACTIVITIES BY WILDERNESS MANAGEMENT

MINING LAW ADMINISTRATION

No mining claims can be located after wilderness designation unless allowed by the specific authorizing wilderness legislation. Prior to conducting operations on mining claims properly located before wilderness designation, a plan of operation must be filed pursuant to 43 Code of Federal Regulations (CFR) 3809.

Prior to approving plans of operations on claims, or allowing operations to continue that had been approved prior to designation, a validity examination of the unpatented claims must be conducted. The validity examination must confirm that as of the date of wilderness designation a discovery of valuable minerals has been made on the claim(s). The requirement of discovery has been met when minerals have been found of such character that a person of ordinary prudence would be justified in the further expenditure of his labor and means, with a reasonable prospect of success in developing a valuable mine. Any disapproval or denial of a plan of operations by the authorized officer is subject to appeal by the operator under the provisions of 43 CFR 3809.4.

Those activities otherwise generally prohibited in wilderness, including the use of mechanical transport, motorized equipment, or aircraft, shall be authorized only when there is no reasonable alternative.

The reclamation of the site and other disturbed areas will vary with the location, soil characteristics, type of vegetative cover, and type and extent of disturbance. As a minimum, all sites will be treated in such a manner that they will not cause accelerated erosion, siltation of streams, a hazard to wilderness visitors, or unnecessary or undue degradation of the land. Also, as a minimum, all excavations with vertical cuts in soil will be sloped to a stable angle of repose. Generally, hand-dug pits or shafts with the excavated material still at hand will be refilled. The main objective will be to minimize remaining evidence of human activities. It may not be practical to return an area to its original contour, but it will generally be reasonable to return it to a contour which will appear harmonious with adjacent terrain. An effort will be made when practical and reasonable to put topsoil equal in quality to that which was removed over disturbed soil surfaces to promote natural revegetation or to aid in seeding. Where native seed is available and its use is reasonable, disturbed areas will be seeded to native plant species provided the area originally supported such vegetation. All structures and improvements must be removed when no longer needed for the exploration of future mining.

Mining locations shall be held and used solely for mining. For a valid claim located after the date, an area is established as wilderness, the patent conveys title to mineral rights only. All surface rights are reserved to the United States. Except as specifically provided in the Wilderness Act or the Act designating the area as wilderness, no use of the surface of the claim or its resources not reasonably required for carrying on mining or prospecting shall be allowed.

MINERAL MATERIALS

No sales or free use permits for sand and gravel, cinders, crushed rock, humates, building stone, or any other common variety mineral will be issued from designated wilderness areas.

MINERAL LEASING

No leases will be allowed on designated wilderness unless the authorizing legislation allows it. Operations on leases issued after the enactment of Federal Land Policy and Management Act (FLPMA) include stipulations to protect wilderness values. A standard stipulation was instituted in May 1982 which requires extensive reclamation so that impacts will be substantially unnoticeable in the area as a whole. Stipulations vary on leases issued prior to 1982. No leases have been allowed on WSAs since January 1983 pursuant to restrictions in BLM's budget legislation. These restrictions are expected to continue in future budget authorizations. All pre-FLPMA leases are assumed to be expired prior to designation.

Section 5 of the Wilderness Act ensures that adequate access is provided to private or State lands wholly encompassed by wilderness areas. Access to private or State mineral rights associated with Federal surface designated as wilderness, will depend on the specific language of the instruments which originally conveyed the surface and reserved the mineral rights. It is assumed that if rights to ingress and egress were reserved, the BLM must provide adequate and reasonable access. As of present, surface rights associated with the extralateral subsurface rights of patented claims are unclear.

ESTIMATED VALUE OF IMPACTED COPPER RESOURCES

In order to illustrate the potential economic impacts of withdrawing metallic mineral resources, the following estimates were generated concerning the value of copper resources proposed for withdrawal under each of the alternatives. Copper was chosen to illustrate economic impacts for the following reasons: (1) New Mexico has been a long time producer of copper; (2) abundant information and forecasts are available concerning copper supply and demand; (3) at least 83 percent of the U.S. copper resources and most of the WSAs are located within the Basin and Range province (Brobst and Pratt, 1973); and (4) copper tends to be in close association with many of the other metals identified above. The estimates of value associated with the proposed alternatives are based on the following assumptions:

1. U.S. demand of 4,600,000 tons of copper in the year 2000.
2. Three percent annual increase in U.S. demand after the year 2000.
3. \$0.75/lb is the value of copper.
4. Seventy-five percent of U.S. demand is fulfilled by U.S. producers.
5. Ten percent of U.S. production is attributed to New Mexico.
6. Existing identified reserves will fulfill all New Mexico production until the year 2005.
7. All identified copper bearing mineral resource areas on Map 3-7 have equal probability of supplying copper.
8. All anticipated value of production for 100 years is discounted annually at 10 percent; this approximates the value into perpetuity.
9. 1985 constant dollars are used.

Based on the above parameters, the total present worth of copper resources withdrawn under each of the proposed alternatives are as follows:

<u>Alternative</u>	<u>Percent of NM Known Copper Resource Lands</u>	<u>Estimate Present Worth of Copper Resources</u>
All Wilderness Alternative	3.6	\$56,000,000
Emphasis on Manageability Alternative	2.3	\$33,000,000
Proposed Action	1.3	\$20,000,000
Conflict Resolution Alternative	0.5	\$ 8,000,000
No Wilderness Alternative		0

Estimated present worth of all copper resources in New Mexico = \$1,550,000,000

Since a few large operations can fulfill the above anticipated demand and no one can accurately predict which copper resource lands will go into production, the actual impact could range from 0 to 1.55 billion dollars.

TABLE A-1
DEMAND AND PRODUCTION RELATIONSHIPS -
ENERGY MINERALS (1983) - QUADRILLION BTU

Commodity	U.S. Consumption	Production	U.S. Exports	New Mexico Production	Supply Problem
Coal	15.877	17.225	1.76	.459	None
Natural Gas	17.535	16.482	.056	.930	Moderate
Petroleum ^{a/}	30.076	18.392	.00443	.435	High
Uranium	Unknown	10,600	950.	3,905 ^{b/}	None

SOURCE: U.S. Dept. of Energy (1984) New Mexico Energy and Minerals Department (1984) and New Mexico Oil and Gas Association (1984).

NOTES: ^{a/} thousand short tons U₃O₈
^{b/} 1982

TABLE A-2
DEMAND AND PRODUCTION RELATIONSHIPS - METALS

Commodity	1990 Probable Demand in U.S.	1990 Production Multiple Year Trend Projections	1990 U.S. Production Estimated by U.S.B.M.	1983 New Mexico Production	Supply Problem
Bismuth ^{a/}	2,940	140	300	0	High
Cobalt ^{a/}	27,600	0	6,000	0	High
Copper ^{b/}	2,500	1,890	2,000	156	Moderate
Gold ^{c/}	4,450	740	2,020	49.3	Moderate
Iron Ore ^{d/}	104	64	85	Withheld ^{k/}	Moderate
Lead ^{b/}	900	878	600	0	None
Manganese ^{e/}	1,780	0	30	0	Moderate
Molybdenum ^{a/}	110,000	180,000	225,000	Withheld ^{k/}	None
Nickel ^{f/}	300	17.5	34.8	0	High
Silver ^{g/}	170.0	41.3	57.0	1.8	Low
Thorium ^{h/}	75	0	70	0	Low
Tin ^{i/}	45,100	90	200	0	High
Tungsten ^{a/}	33,000	8,078	9,000	0	Moderate
Vanadium ^{i/}	12,700	6,300	9,300	0	Moderate
Zinc ^{j/}	1,300	418	7,000	Withheld ^{k/}	Low

SOURCE: U.S. Bureau of Mines (1979, 1980) and New Mexico Bureau of Mine Inspection (1984).

NOTES: ^{a/} thousand pounds
^{b/} thousand metric tons
^{c/} thousand troy ounces
^{d/} million short tons of contained iron
^{e/} thousand short tons of manganese content
^{f/} thousand tons
^{g/} million troy ounces
^{h/} short tons
^{i/} metric tons
^{j/} thousand metric tons recoverable zinc
^{k/} Production figures are withheld to protect confidential records of private companies.

TABLE A-3
DEMAND AND PRODUCTION RELATIONSHIPS -
INDUSTRIAL MINERALS

Commodity	1990 Probable Demand in U.S.	1990 Production Multiple Year Trend Projections	1990 U.S. Production Estimated by U.S.B.M.	1983 New Mexico Production	Supply Problem
Barite ^{a/}	3,950	1,897	2,300	0	Low
Cement ^{b/}	100	96.2	91	Unknown	None
Cinders/ Scoria	Unknown	Unknown	Unknown	452,346 tons	None
Crushed Rock ^{b/}	1,370	N/A	Equal to Demand	Unknown	None
Dimension ^{a/} Stone	1,740	500	1,600	Unknown	None
Fluorine ^{a/}	820	137	100	0	High
Gypsum ^{a/}	28,400	14,600	19,600	2,765	None
Humates ^{a/}	N/A	N/A	N/A	16,079	None
Lime ^{a/}	29,300	27,500	27,000	Unknown	None
Salt ^{a/}	60,200	63,200	55,000	141.7	None
Sand & Gravel ^{b/}	1,130	1,220	1,130	9.7	None

SOURCE: U.S. Bureau of Mines (1979, 1980) and New Mexico Bureau of Mine Inspection (1984).

NOTES: ^{a/} thousand short tons
^{b/} million short tons
^{c/} 21-year trend projection
^{d/} cubic yards
N/A not available

TABLE A-4
IMPACT OF THE PROPOSED ACTION BY WSA

Commodity	WSA	Acres of High Mineral Potential	Acres of Moderate Mineral Potential	Total Acres of High and Moderate Potential
<u>Energy Resources</u>				
Coal				
	Chamisa	0	800	800
	Empedrado	2,000	900	2,900
	Ignacio Chavez	7,600	200	7,800
	La Lena	1,900	2,400	4,300
		<u>11,500</u>	<u>4,300</u>	<u>15,800</u>
Geothermal				
	Ojito	0	900	900
	Sierra de las Canas	0	12,800	12,800
		<u>0</u>	<u>13,700</u>	<u>13,700</u>
Oil and Gas				
	Big Hatchet Mtns.	0	100	100
	Cabazon	0	8,200	8,200
	Chamisa	0	12,800	12,800
	Continental Divide	0	37,600	37,600
	Empedrado	400	8,300	8,700
	Horse Mountain	0	4,400	4,400
	Ignacio Chavez	0	33,600	33,600
	Jornada del Muerto	0	31,100	31,100
	La Lena	5,400	4,000	9,400
	Little Rimrock	0	6,500	6,500
	Manzano	0	900	900
	Ojito	0	10,900	10,900
	Petaca Pinta	0	4,000	4,000
	Pinyon	0	6,600	6,600
	Rimrock	0	9,800	9,800
	Sand Canyon	0	3,300	3,300
	West Potrillo Mtns. and Mount Riley	0	8,000	8,000
		<u>5,800</u>	<u>190,100</u>	<u>196,000</u>
Uranium				
	Ojito	0	10,900	10,900
	Sierra Ladrones	1,800	8,200	10,000
		<u>1,800</u>	<u>19,100</u>	<u>20,900</u>
<u>Metallic Resources</u>				
Cobalt				
	Sierra Ladrones	0	8,100	8,100

TABLE A-4
IMPACT OF THE PROPOSED ACTION BY WSA
(Continued)

Commodity	WSA	Acres of High Mineral Potential	Acres of Moderate Mineral Potential	Total Acres of High and Moderate Potential
Copper				
	Big Hatchet Mtns.	0	200	200
	Horse Mountain	0	4,400	4,400
	Organ Mountains	200	3,600	3,800
	Sierra de las Canas	0	12,800	12,800
	Sierra Ladrones	0	10,000	10,000
		<u>200</u>	<u>31,000</u>	<u>31,200</u>
Gold				
	Big Hatchet Mtns.	0	200	200
	Horse Mountain	0	4,400	4,400
	Organ Mountains	<u>200</u>	<u>3,600</u>	<u>3,800</u>
		200	8,200	8,400
Lead				
	Big Hatchet Mtns.	0	200	200
	Horse Mountain	0	4,400	4,400
	Organ Mountains	200	3,600	3,800
	Sierra de las Canas	0	12,800	12,800
	Sierra Ladrones	0	600	600
		<u>200</u>	<u>21,600</u>	<u>21,800</u>
Molybdenum				
	Horse Mountain	0	4,400	4,400
	Organ Mountains	<u>200</u>	<u>3,600</u>	<u>3,800</u>
		200	8,000	8,200
Nickel				
	Sierra Ladrones	0	8,100	8,100
Silver				
	Big Hatchet Mtns.	0	200	200
	Horse Mountain	0	4,400	4,400
	Organ Mountains	200	3,600	3,800
	Sierra de las Canas	0	12,800	12,800
	Sierra Ladrones	0	600	600
		<u>200</u>	<u>21,600</u>	<u>21,800</u>
Tin				
	Continental Divide	0	16,600	16,600
Tungsten				
	Horse Mountain	0	4,400	4,400
	Organ Mountains	<u>0</u>	<u>3,800</u>	<u>3,800</u>
		0	8,200	8,200

TABLE A-4
IMPACT OF THE PROPOSED ACTION BY WSA
(Concluded)

Commodity	WSA	Acres of High Mineral Potential	Acres of Moderate Mineral Potential	Total Acres of High and Moderate Potential
Zinc				
	Big Hatchet Mtns.	0	200	200
	Horse Mountain	0	4,400	4,400
	Organ Mountains	200	3,600	3,800
	Sierra de las Canas	0	12,800	12,800
	Sierra Ladrones	0	600	600
		200	21,600	21,800
<u>Non-Metallic Resources</u>				
Barite				
	Sierra de las Canas	0	12,800	12,800
	Sierra Ladrones	0	600	600
		0	13,400	13,400
Building Stone				
	Aden Lava Flow	1,200	2,300	3,500
Cinders/Scoria				
	West Potrillo Mtns. and Mt. Riley	1,400	7,400	8,800
Fluorspar				
	Organ Mountains	100	0	100
	Sierra de las Canas	0	12,800	12,800
		100	12,800	12,900
Gypsum				
	Big Hatchet Mtns.	0	200	200
High Calcium Limestone				
	Sierra Ladrones	0	5,700	5,700
Humates				
	Chamisa	0	800	800
	Empedrado	2,000	900	2,900
	Ignacio Chavez	7,600	200	7,800
	La Lena	1,900	2,400	4,300
		11,500	4,300	15,800

SOURCE: BLM WARs, 1988.

TABLE A-5
IMPACT OF THE ALL WILDERNESS ALTERNATIVE BY WSA

Commodity	WSA	Acres of High Mineral Potential	Acres of Moderate Mineral Potential	Total Acres of High and Moderate Potential
<u>Energy Resources</u>				
Coal				
	Ah-shi-sle-pah	6,600	0	6,600
	Chamisa	0	800	800
	Eagle Peak	0	44,000	44,000
	Empedrado	2,000	900	2,900
	Ignacio Chavez	7,600	200	7,800
	La Lena	1,900	2,400	4,300
		<u>18,100</u>	<u>48,300</u>	<u>66,400</u>
Geothermal				
	Ojito	0	900	900
	Presilla	0	8,700	8,700
	Robledo Mtns.	0	1,800	1,800
	Sierra de las Canas	0	12,800	12,800
	Veranito	0	7,200	7,200
		<u>0</u>	<u>31,400</u>	<u>31,400</u>
Oil and Gas				
	Ah-shi-sle-pah	0	6,600	6,600
	Big Hatchet Mtns.	0	11,700	11,700
	Cabazon	0	8,200	8,200
	Chamisa	0	13,700	13,700
	Continental Divide	0	68,800	68,800
	Culp Canyon	0	10,900	10,900
	Empedrado	400	8,300	8,700
	Horse Mountain	0	5,000	5,000
	Ignacio Chavez	0	33,300	33,300
	Jornada del Muerto	0	31,100	31,100
	La Lena	5,400	4,000	9,400
	Little Rimrock	0	6,500	6,500
	Manzano	0	900	900
	Mudgetts	2,900	0	2,900
	Ojito	0	10,900	10,900
	Petaca Pinta	0	5,000	5,000
	Pinyon	0	6,600	6,600
	Rimrock	0	9,800	9,800
	Sand Canyon	0	3,600	3,600
	West Potrillo Mtns. and Mount Riley	0	8,000	8,000
		<u>8,700</u>	<u>252,900</u>	<u>261,600</u>

TABLE A-5
IMPACT OF THE ALL WILDERNESS ALTERNATIVE BY WSA
(Continued)

Commodity	WSA	Acres of High Mineral Potential	Acres of Moderate Mineral Potential	Total Acres of High and Moderate Potential
Uranium				
	Eagle Peak	0	8,000	8,000
	Ojito	0	10,900	10,900
	Presilla	0	5,500	5,500
	Sierra Ladrones	1,800	8,200	10,000
	Veranito	0	4,300	4,300
		<u>1,800</u>	<u>36,900</u>	<u>38,700</u>
<u>Metallic Resources</u>				
Cobalt				
	Sierra Ladrones	0	8,100	8,100
Copper				
	Big Hatchet Mtns.	0	200	200
	Cooke's Range	1,100	3,700	4,800
	Florida Mtns.	500	1,000	1,500
	Horse Mountain	0	5,000	5,000
	Organ Mountains	200	3,600	3,800
	Presilla	0	700	700
	Sierra de las Canas	0	12,800	12,800
	Sierra Ladrones	0	10,000	10,000
	Stallion	0	24,200	24,200
		<u>1,800</u>	<u>61,200</u>	<u>63,000</u>
Gold				
	Big Hatchet Mtns.	0	200	200
	Cooke's Range	1,100	3,700	4,800
	Florida Mountains	500	1,000	1,500
	Horse Mountain	0	5,000	5,000
	Organ Mountains	200	3,600	3,800
		<u>1,800</u>	<u>13,500</u>	<u>15,300</u>
Lead				
	Big Hatchet Mtns.	0	200	200
	Cooke's Range	1,100	3,700	4,800
	Florida Mountains	500	1,000	1,500
	Horse Mountain	0	5,000	5,000
	Organ Mountains	200	3,600	3,800
	Presilla	0	4,300	4,300
	Sierra de las Canas	0	12,800	12,800
	Sierra Ladrones	0	600	600
		<u>1,800</u>	<u>31,200</u>	<u>33,000</u>
Manganese				
	Florida Mountains	0	1,300	1,300

TABLE A-5
IMPACT OF THE ALL WILDERNESS ALTERNATIVE BY WSA
(Continued)

Commodity	WSA	Acres of High Mineral Potential	Acres of Moderate Mineral Potential	Total Acres of High and Moderate Potential
Molybdenum				
	Cooke's Range	1,100	3,700	4,800
	Florida Mountains	500	1,000	1,500
	Horse Mountain	0	5,000	5,000
	Organ Mountain	200	3,600	3,800
		<u>1,800</u>	<u>13,300</u>	<u>15,100</u>
Nickel				
	Sierra Ladrones	0	8,100	8,100
Silver				
	Big Hatchet Mtns.	0	200	200
	Cooke's Range	1,100	3,700	4,800
	Florida Mountains	500	1,000	1,500
	Horse Mountain	0	5,000	5,000
	Organ Mountains	200	3,600	3,800
	Presilla	0	700	700
	Sierra de las Canas	0	12,800	12,800
	Sierra Ladrones	0	600	600
	Stallion	0	24,200	24,200
		<u>1,800</u>	<u>51,800</u>	<u>53,600</u>
Tin				
	Continental Divide	0	24,000	24,000
Tungsten				
	Horse Mountain	0	5,000	5,000
	Organ Mountains	0	3,800	3,800
		<u>0</u>	<u>8,800</u>	<u>8,800</u>
Zinc				
	Big Hatchet Mtns.	0	200	200
	Cooke's Range	1,100	3,700	4,800
	Florida Mtns.	500	1,000	1,500
	Horse Mountain	0	5,000	5,000
	Organ Mountains	200	3,600	3,800
	Presilla	0	4,300	4,300
	Sierra de las Canas	0	12,800	12,800
	Sierra Ladrones	0	600	600
		<u>1,800</u>	<u>31,200</u>	<u>33,000</u>

TABLE A-5
IMPACT OF THE ALL WILDERNESS ALTERNATIVE BY WSA
(Continued)

Commodity	WSA	Acres of High Mineral Potential	Acres of Moderate Mineral Potential	Total Acres of High and Moderate Potential
Barite				
	Presilla	0	4,300	4,300
	Sierra de las Canas	0	12,800	12,800
	Sierra Ladrones	0	600	600
		<u>0</u>	<u>17,700</u>	<u>17,700</u>
<u>Non-Metallic Resources</u>				
Building Stone				
	Aden Lava Flow	1,200	2,300	3,500
	Robledo Mountains	1,300	0	1,300
		<u>2,500</u>	<u>2,300</u>	<u>4,800</u>
Cinders/Scoria				
	Eagle Peak	0	1,500	1,500
	Mesita Blanca	300	2,000	2,300
	West Potrillo Mtns. and Mt. Riley	1,400	7,400	8,800
		<u>1,700</u>	<u>10,900</u>	<u>12,600</u>
Fluorspar				
	Florida Mountains	0	400	400
	Organ Mountains	100	0	100
	Presilla	0	4,300	4,300
	Sierra de las Canas	0	12,800	12,800
		<u>100</u>	<u>17,500</u>	<u>17,600</u>
Gypsum				
	Big Hatchet Mtns.	0	200	200
High Calcium Limestone				
	Robledo Mountains	3,700	0	3,700
	Sierra Ladrones	0	10,800	10,800
		<u>3,700</u>	<u>10,800</u>	<u>14,500</u>
High Magnesium Dolomite				
	Robledo Mountains	0	200	200
Humates				
	Chamisa	0	800	800
	Empedrado	2,000	900	2,900
	Ignacio Chavez	7,600	200	7,800
	La Lena	1,900	2,400	4,300
		<u>11,500</u>	<u>4,300</u>	<u>15,800</u>

TABLE A-5
IMPACT OF THE ALL WILDERNESS ALTERNATIVE BY WSA
(Concluded)

Commodity	WSA	Acres of High Mineral Potential	Acres of Moderate Mineral Potential	Total Acres of High and Moderate Potential
Sand and Gravel				
	Eagle Peak	0	2,500	2,500
	Mesita Blanca	0	800	800
	Presilla	0	1,200	1,200
	Veranito	0	450	450
		<u>0</u>	<u>4,950</u>	<u>4,950</u>

SOURCE: BLM WARs, 1988.

TABLE A-6
IMPACT OF THE MANAGEABILITY ALTERNATIVE BY WSA

Commodity	WSA	Acres of High Mineral Potential	Acres of Moderate Mineral Potential	Total Acres of High and Moderate Potential
<u>Energy Resources</u>				
Coal				
	Chamisa	0	800	800
	Eagle Peak	0	17,300	17,300
	Empedrado	2,000	900	2,900
	Ignacio Chavez	7,600	200	7,800
	La Lena	1,900	2,400	4,300
		<u>11,500</u>	<u>21,600</u>	<u>33,100</u>
Geothermal				
	Ojito	0	900	900
	Robledo Mountains	0	1,800	1,800
	Sierra de las Canas	0	12,800	12,800
	Veranito	0	7,200	7,200
		<u>0</u>	<u>22,700</u>	<u>22,700</u>
Oil and Gas				
	Big Hatchet Mtns.	0	100	100
	Cabezon	0	8,200	8,200
	Chamisa	0	12,800	12,800
	Continental Divide	0	37,600	37,600
	Empedrado	400	8,300	8,700
	Horse Mountain	0	4,400	4,400
	Ignacio Chavez	0	33,600	33,600
	Jornada del Muerto	0	31,100	31,100
	La Lena	5,400	4,000	9,400
	Little Rimrock	0	6,500	6,500
	Manzano	0	900	900
	Mudgetts	2,200	0	2,200
	Ojito	0	10,900	10,900
	Petaca Pinta	0	4,000	4,000
	Pinyon	0	6,600	6,600
	Rimrock	0	9,800	9,800
	Sand Canyon	0	3,300	3,300
	West Potrillo Mtns. and Mt. Riley	0	8,000	8,000
		<u>8,090</u>	<u>190,100</u>	<u>198,100</u>
Uranium				
	Ojito	0	10,900	10,900
	Sierra Ladrones	1,800	8,200	10,000
	Veranito	0	4,300	4,300
		<u>1,800</u>	<u>23,400</u>	<u>25,200</u>

TABLE A-6
IMPACT OF THE MANAGEABILITY ALTERNATIVE BY WSA
(Continued)

Commodity	WSA	Acres of High Mineral Potential	Acres of Moderate Mineral Potential	Total Acres of High and Moderate Potential
<u>Metallic Resources</u>				
Cobalt				
	Sierra Ladrones	0	8,100	8,100
Copper				
	Big Hatchet Mtns.	0	200	200
	Florida Mountains	500	1,000	1,500
	Horse Mountain	0	4,400	4,400
	Organ Mountains	200	3,600	3,800
	Sierra de las Canas	0	12,800	12,800
	Sierra Ladrones	0	10,000	10,000
	Stallion	0	24,200	24,200
		<u>700</u>	<u>56,200</u>	<u>56,900</u>
Gold				
	Big Hatchet Mtns.	0	200	200
	Florida Mountains	500	1,000	1,500
	Horse Mountain	0	4,400	4,400
	Organ Mountain	200	3,600	3,800
		<u>700</u>	<u>9,200</u>	<u>9,900</u>
Lead				
	Big Hatchet Mtns.	0	200	200
	Florida Mountains	500	1,000	1,500
	Horse Mountain	0	4,400	4,400
	Organ Mountain	200	3,600	3,800
	Sierra de las Canas	0	12,800	12,800
	Sierra Ladrones	0	600	600
		<u>700</u>	<u>22,600</u>	<u>23,300</u>
Manganese				
	Florida Mountains	0	1,300	1,300
Molybdenum				
	Florida Mountains	500	1,000	1,500
	Horse Mountain	0	4,400	4,400
	Organ Mountain	200	3,600	3,800
		<u>700</u>	<u>9,000</u>	<u>9,700</u>
Nickel				
	Sierra Ladrones	0	8,100	8,100

TABLE A-6
IMPACT OF THE MANAGEABILITY ALTERNATIVE BY WSA
(Continued)

Commodity	WSA	Acres of High Mineral Potential	Acres of Moderate Mineral Potential	Total Acres of High and Moderate Potential
Silver				
	Big Hatchet Mtns.	0	200	200
	Florida Mountains	500	1,000	1,500
	Horse Mountain	0	4,400	4,400
	Organ Mountains	200	3,600	3,800
	Sierra de las Canas	0	12,800	12,800
	Sierra Ladrones	0	600	600
	Stallion	0	24,200	24,200
		<u>700</u>	<u>46,800</u>	<u>47,500</u>
Tin				
	Continental Divide	0	16,600	16,600
Tungsten				
	Horse Mountain	0	4,400	4,400
	Organ Mountains	0	3,800	3,800
		<u>0</u>	<u>8,200</u>	<u>8,200</u>
Zinc				
	Big Hatchet Mtns.	0	200	200
	Florida Mtns.	500	1,000	1,500
	Horse Mountain	0	4,400	4,400
	Organ Mountains	200	3,600	3,800
	Sierra de las Canas	0	12,800	12,800
	Sierra Ladrones	0	600	600
		<u>700</u>	<u>22,600</u>	<u>23,300</u>
<u>Non-Metallic Resources</u>				
Barite				
	Sierra de las Canas	0	12,800	12,800
	Sierra Ladrones	0	600	600
		<u>0</u>	<u>13,400</u>	<u>13,400</u>
Building Stone				
	Aden Lava Flow	1,200	2,300	3,500
	Robledo Mountains	1,300	0	1,300
		<u>2,500</u>	<u>2,300</u>	<u>4,800</u>

TABLE A-6
IMPACT OF THE MANAGEABILITY ALTERNATIVE BY WSA
(Concluded)

Commodity	WSA	Acres of High Mineral Potential	Acres of Moderate Mineral Potential	Total Acres of High and Moderate Potential
Cinders/Scoria				
	Mesita Blanca	300	2,000	2,300
	West Potrillo Mtns. and Mt. Riley	<u>1,400</u> 1,700	<u>7,400</u> 9,400	<u>8,800</u> 11,100
Fluorspar				
	Florida Mountains	0	400	400
	Organ Mountains	100	0	100
	Sierra de las Canas	<u>0</u> 100	<u>12,800</u> 13,200	<u>12,800</u> 13,300
Gypsum				
	Big Hatchet Mtns.	0	200	200
High Calcium Limestone				
	Robledo Mountains	3,700	0	3,700
	Sierra Ladrones	<u>0</u> 3,700	<u>5,700</u> 5,700	<u>5,700</u> 9,400
High Magnesium Dolomite				
	Robledo Mountains	0	200	200
Humates				
	Chamisa	0	800	800
	Empedrado	2,000	900	2,900
	Ignacio Chavez	7,600	200	7,800
	La Lena	<u>1,900</u> 11,500	<u>2,400</u> 4,300	<u>4,300</u> 15,800
Sand and Gravel				
	Mesita Blanca	0	800	800
	Veranito	<u>0</u> 0	<u>450</u> 1,250	<u>450</u> 1,250

SOURCE: BLM WARs, 1988.

TABLE A-7
IMPACT OF THE CONFLICT RESOLUTION ALTERNATIVE BY WSA

Commodity	WSA	Acres of High Mineral Potential	Acres of Moderate Mineral Potential	Total Acres of High and Moderate Potential
<u>Energy Resources</u>				
Coal				
	Chamisa	0	800	800
	Ignacio Chavez	7,600	200	7,800
		<u>7,600</u>	<u>1,000</u>	<u>8,600</u>
Geothermal				
	Sierra de las Canas	0	12,800	12,800
Oil and Gas				
	Big Hatchet Mtns.	0	100	100
	Chamisa	0	12,600	12,600
	Horse Mountain	0	4,400	4,400
	Ignacio Chavez	0	24,800	24,800
	West Potrillo Mtns. and Mount Riley	0	8,000	8,000
		<u>0</u>	<u>49,900</u>	<u>49,900</u>
<u>Metallic Resources</u>				
Copper				
	Big Hatchet Mtns.	0	200	200
	Horse Mountain	0	4,400	4,400
	Sierra de las Canas	0	12,800	12,800
		<u>0</u>	<u>17,400</u>	<u>17,400</u>
Gold				
	Big Hatchet Mtns.	0	200	200
	Horse Mountain	0	4,400	4,400
		<u>0</u>	<u>4,600</u>	<u>4,600</u>
Lead				
	Big Hatchet Mtns.	0	200	200
	Horse Mountain	0	4,400	4,400
	Sierra de las Canas	0	12,800	12,800
		<u>0</u>	<u>17,400</u>	<u>17,400</u>
Molybdenum				
	Horse Mountain	0	4,400	4,400

TABLE A-7
IMPACT OF THE CONFLICT RESOLUTION ALTERNATIVE BY WSA
(Concluded)

Commodity	WSA	Acres of High Mineral Potential	Acres of Moderate Mineral Potential	Total Acres of High and Moderate Potential
Silver				
	Big Hatchet Mtns.	0	200	200
	Horse Mountain	0	4,400	4,400
	Sierra de las Canas	0	12,800	12,800
		<u>0</u>	<u>17,400</u>	<u>17,400</u>
Tungsten				
	Horse Mountain	0	4,400	4,400
Zinc				
	Big Hatchet Mtns.	0	200	200
	Horse Mountain	0	4,400	4,400
	Sierra de las Canas	0	12,800	12,800
		<u>0</u>	<u>17,400</u>	<u>17,400</u>
<u>Non-Metallic Resources</u>				
Barite				
	Sierra Ladrones	0	600	600
Building Stone				
	Aden Lava Flow	1,200	2,300	3,500
Cinders/Scoria				
	West Potrillo Mtns. and Mt. Riley	1,400	7,400	8,800
Fluorspar				
	Sierra de las Canas	0	12,800	12,800
Gypsum				
	Big Hatchet Mtns.	0	200	200
Humates				
	Chamisa	0	800	800
	Ignacio Chavez	5,700	0	5,700
		<u>5,700</u>	<u>800</u>	<u>6,500</u>

SOURCE: BLM WARs, 1988.

TABLE A-7
IMPACT OF THE CONFLICT RESOLUTION ALTERNATIVE BY WSA
(Concluded)

Commodity	WSA	Acres of High Mineral Potential	Acres of Moderate Mineral Potential	Total Acres of High and Moderate Potential
Silver				
	Big Hatchet Mtns.	0	200	200
	Horse Mountain	0	4,400	4,400
	Sierra de las Canas	0	12,800	12,800
		<u>0</u>	<u>17,400</u>	<u>17,400</u>
Tungsten				
	Horse Mountain	0	4,400	4,400
Zinc				
	Big Hatchet Mtns.	0	200	200
	Horse Mountain	0	4,400	4,400
	Sierra de las Canas	0	12,800	12,800
		<u>0</u>	<u>17,400</u>	<u>17,400</u>
<u>Non-Metallic Resources</u>				
Barite				
	Sierra Ladrones	0	600	600
Building Stone				
	Aden Lava Flow	1,200	2,300	3,500
Cinders/Scoria				
	West Potrillo Mtns. and Mt. Riley	1,400	7,400	8,800
Fluorspar				
	Sierra de las Canas	0	12,800	12,800
Gypsum				
	Big Hatchet Mtns.	0	200	200
Humates				
	Chamisa	0	800	800
	Ignacio Chavez	<u>5,700</u>	<u>0</u>	<u>5,700</u>
		5,700	800	6,500

SOURCE: BLM WARs, 1986.

GLOSSARY

GLOSSARY

ADIT. A nearly horizontal entrance to a mine.

AGGREGATE. A mineral material such as sand, gravel, shells, or broken stone.

ALLOTMENT. An area of land designated and managed for grazing of livestock.

ALLOTMENT MANAGEMENT PLAN (AMP). A documented program which applies to rangeland operations on public land, which is prepared in consultation with the permittee(s) or lessee(s) involved, and which: (1) prescribes the manner in and extent to which livestock operations will be conducted in order to meet the multiple-use, sustained-yield, economic, and other needs and objectives as determined for public land through land use planning; (2) describes the type, location, ownership, and general specifications for the rangeland developments to be installed and maintained on public land to meet the livestock grazing and other objectives of land management; and (3) contains such other provisions relating to livestock grazing and other objectives as may be prescribed by the authorized officer consistent with applicable law.

ALLUVIAL. Pertaining to material that is transported and deposited by running water.

ALLUVIAL CONE. An alluvial fan with steep slopes.

ALLUVIUM. Material, including clay, silt, sand, gravel, or similar unconsolidated sediments, deposited by a stream or other body of running water.

ANDESITE. A volcanic rock composed essentially of andesine and one or more mafic constituents. The mafic constituents may be pyroxene, hornblende, or biotite.

ANIMAL UNIT (AU). Considered to be one mature cow (1,000 pounds) or its equivalent based upon average daily forage consumption of 26 pounds of dry matter per day.

ANIMAL UNIT MONTH (AUM). The amount of forage required by an animal unit for one month.

ANTICLINE. An upfold of stratified rock in which the beds bend downward in opposite directions from the crest.

ARCHAIC. That period of human adaptation following the late Pleistocene Paleo-Indian people and prior to the development of sedentary agricultural groups in the Southwest.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN (ACEC). Areas within the public land where special management attention is needed to protect and prevent irreparable damage to important historical, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards.

ARKOSE. A sandstone containing 25 percent or more of feldspars, usually derived from silicic igneous rocks.

ASPECT SPECIES. A vegetative species that appears to be dominant in the landscape, although it may be only a small percent of the total vegetative composition.

AVIFAUNA. All birds of a given region.

BASALT. A dark to medium-dark colored, commonly extrusive, mafic igneous rock.

BASIN AND RANGE PHYSIOGRAPHIC PROVINCE. A province in the southwestern United States characterized by a series of tilted fault blocks forming longitudinal ridges or mountains and broad intervening basins.

BATHOLITH. A great mass of intruded igneous rock that extends downward to unknown depth.

BOLSON. A flat-floored desert valley that drains toward a playa or central depression.

BUREAU SENSITIVE. Fish, wildlife, and plants which are candidates for Federal listing or species proposed for Federal listing automatically become Bureau Sensitive species.

CALDERA. A large basin-shaped volcanic depression the diameter of which is much greater than the vent.

CALICHE. A layer in the soil more or less cemented by calcium carbonates (CaCO_3), commonly found in arid and semiarid regions.

CARBONACEOUS. 1. Coaly. 2. Pertaining to, or composed largely of, carbon. 3. The carbonaceous sediments include original organic tissues and subsequently produced derivatives of which the composition is chemically organized.

CAULDRON. An inclusive term for all volcanic subsidence structures regardless of shape or size, depth of erosion, or connection with the surface.

CHECK DAM. Small dam constructed in a gully or other small watercourse to decrease the streamflow velocity, minimize channel scour, and promote deposition of sediment.

CHERRY-STEMMED. An unofficial term used to describe the way a wilderness inventory unit boundary is drawn to exclude a road that enters the unit; the resulting boundary resembles a cherry-stem.

CLOSED BASIN. A basin is considered closed with respect to surface flow if its topography prevents the occurrence of visible outflow. It is closed hydrologically if neither surface nor underground outflow can occur.

CONFORMABLE. 1. Strata or groups of strata lying one above another in parallel order are said to be conformable. 2. When beds or strata lie upon one another in unbroken and parallel order, and this arrangement shows that no disturbance or denudation has taken place at the locality while their deposition was going on, they are said to be conformable.

CONGLOMERATES. Clastic sedimentary rock composed of rounded fragments varying from small pebbles to large boulders in a cement of calcareous material such as iron oxide, silica, or hardened clay.

CONTIGUOUS LANDS. As it pertains to wilderness, lands or legal subdivisions having a common boundary. Lands having only a common corner are not contiguous.

COPPICE DUNES. Sand dunes stabilized around shrubs.

CRITICAL MINERALS. Those minerals that are critical to the economy and security of the United States and for which we are now dependent on foreign sources. These minerals are listed in the National Defense Stockpile Inventory of Strategic and Critical Materials.

CUESTAS. A hill or ridge with a steep face on one side and a gentle slope on the other.

CULTURAL RESOURCE INVENTORY CLASSES.

Class I - Existing Data Inventory: an inventory study of a defined area designed to provide a narrative overview (cultural resource overview) derived from existing cultural resource information and to provide a compilation of existing cultural resource site record data on which to base the development of the BLM's site record system.

Class II - Sampling Field Inventory: a sample-oriented field inventory designed to locate and record, from surface and exposed profile indications, all cultural resource sites within a portion of a defined area in a manner which will allow an objective estimate of the nature and distribution of cultural resources in the entire defined area. The Class II inventory is a tool utilized in management and planning activities as an accurate predictor of cultural resources in the area of consideration. The primary area of consideration for the implementation of a Class II inventory is a planning unit. The secondary area is a specific project in which an intensive field inventory (Class III) is not practical or necessary.

Class III - Intensive Field Inventory: an intensive field inventory designed to locate and record, from surface and exposed profile indications, all cultural resource sites within a specified area. Normally, upon completion of such inventories in an area, no further cultural resource inventory work is needed. A Class III inventory is appropriate on small project areas, all areas to be disturbed, and primary cultural resource areas.

DEFORMATION. Any change in the original form or volume of rock masses produced by tectonic forces. Folding, faulting, and solid flow are common modes of deformation.

DIKE. A tabular body of igneous rock that cuts across the structure of adjacent rocks or cuts massive rocks.

DIRT TANK. Usually a permanent earthen structure for holding water temporarily. These are built in high rainfall runoff areas such as an arroyo, canyon, or swale area.

DRAINAGE BASIN. A part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded water.

ECOSYSTEM. An interacting natural system including all the component organisms together with its nonliving environment; a community together with its environment; an ecological system.

ECOTONE. A transition area between plant communities which has some of the characteristics of each.

EMBAYMENT. Term describing a continental border area that has sagged concurrently with deposition so that an unusually thick section of sediment results. An embayment is similar to a basin of sedimentation of a geosyncline, and some embayments may be one flank of a larger subsiding feature.

ENDANGERED SPECIES.

Federally Listed: Any species of animal or plant in danger of extinction throughout all or a significant portion of its range.

State (Group I): Species whose prospect of survival or recruitment in the State are in jeopardy in the foreseeable future.

State (Group II): Species whose prospect of survival or recruitment within the State may become jeopardized in the foreseeable future.

EPHEMERAL STREAMS. A stream or portion of a stream which flows only in direct response to precipitation. Such flow is usually of short duration.

EROSION CONTROL STRUCTURES. Usually one large earthen, rock, wire, or cement structure used to hold large concentrated flows of water and release this water in small non-eroding amounts.

EXTENSION AREA. A test range in excess of that provided by the main White Sands Missile Range (WSMR) required for an indefinite period of time to support future military programs.

EXTRUSIVE ROCK. Rocks derived from magma poured out or ejected at the earth's surface.

FAULT. A fracture in the earth's crust along which there has been displacement of one side with respect to the other.

FAULT BLOCK. A block of the earth's crust bounded on at least two opposite sides by faults; it may be elevated or depressed relatively to the adjoining region.

FAULT SCARP. A cliff formed by a fault, usually modified by erosion unless the fault is very recent.

FISSURE. 1. An extensive crack, break, or fracture in the rocks. A mere joint or crack persisting only for a few inches or a few feet is not usually termed a fissure by geologists or miners, although in a strict physical sense, it is one. 2. Where there are well-defined boundaries, very slight evidence of ore within such boundaries is sufficient to prove the existence of a lode. Such boundaries constitute the sides of a fissure.

FLPMA. Federal Land Policy and Management Act of 1976, which mandated the BLM Wilderness Review. Often referred to and pronounced "FLIPMA".

FOLD, FLEXURE. A type of fold, in size microscopic to orogenic, in which movement took place normal to the axial line and parallel with the limbs, producing notable shortening.

FORMATION. The primary unit of formal mapping or description. Most formations possess certain distinctive or combinations of distinctive lithic features. Boundaries are not based on time criteria. Formations may be combined into groups or subdivided into members.

GABION. A mesh container used to confine rocks or stones and used to construct dams and grains or for lining stream channels. The wire baskets are filled on-site with locally available materials and are, thus, unobtrusive. They soon vegetate over and appear natural.

GANGUE. The nonvaluable minerals in ore.

GEOPHYSICAL EXPLORATION. The use of geophysical instruments and methods to determine subsurface conditions by analysis of such properties as specific gravity, electrical conductivity, or magnetic susceptibility. This usually has an economic objective, e.g. discovery of fuel or mineral deposits.

GEO THERMOMETRY. Measurement and study of the earth's heat, usually measured through shallow temperature gradient holes less than 500 feet.

GRABEN. A block generally long compared to its width that has been down thrown along faults relative to the rocks on either side.

GRANDFATHERED. Section 603(c) of the Federal Land Policy and Management Act (FLPMA) directs the BLM to manage lands under wilderness review "so as not to impair the suitability of such areas for preservation as wilderness.... ." However, Section 603(c) also provides a special exception to the "nonimpairment" criteria. Mining, grazing, and mineral leasing uses existing on the date of approval of FLPMA (October 21, 1976) may continue in the same manner and degree as on that date even if these uses impair wilderness values. Such uses are "grandfathered."

HALF-SHRUB. A perennial plant with a woody base whose annually produced stems die back each year.

HEAT FLOW. Dissipation of heat coming from within the earth by conduction or radiation at the surface.

HORST. A block of the earth's crust separated by faults from adjacent blocks that have been relatively depressed.

HYDROCARBONS. Any organic compound, gaseous liquid, or solid, consisting solely of carbon and hydrogen, such as crude oil.

HYDROTHERMAL. Relating to hot water in the formation of minerals by the action of hot solutions rising up through the earth's crust from a cooling magma.

IGNEOUS ROCKS. Rocks formed by solidification of magma.

INHOLDING. Private or State owned land inside the boundary of a wilderness study area but excluded from the wilderness study area.

INITIAL INVENTORY. The first step in the BLM Wilderness Review Process. Inventory units or roadless areas which are obviously unsuitable for wilderness are separated from those which warrant intensive inventory for wilderness characteristics.

INSTANT STUDY AREAS. Section 603 of the Federal Land Policy and Management Act mandated that all primitive or natural areas formally identified prior to November 1, 1975, will be studied for wilderness suitability and recommended to the President by July 1, 1980. There are three such areas in New Mexico.

INTENSIVE INVENTORY. The second major step in the BLM Wilderness Review Process. Roadless areas are carefully inventoried for wilderness characteristics. The result of the intensive inventory is the identification of wilderness study areas.

INTERIOR BOARD OF LAND APPEALS (IBLA). The IBLA, as a component of the Department of the Interior Office of Hearings and Appeals, is an authorized representative of the Secretary. The purpose of the IBLA is to hear, consider, and determine as fully and finally as might the Secretary, matters within the jurisdiction of the Department involving appeals from decisions rendered by Departmental officials relating to (1) the use and disposition of public lands and their resources and (2) the use and disposition of mineral resources in certain acquired lands of the United States. Special procedures for appeals are contained in 43 Code of Federal Regulations, Part 4, Subpart E.

INTERIOR FENCE. Fences used to divide allotments into pastures or holding areas.

INTRUSION. A feature (landform, vegetation, or structure) which is generally considered out of context because of excessive contrast and disharmony with characteristic landscape.

INTRUSIVE ROCK. A rock that consolidated from magma beneath the surface of the earth.

INVENTORY UNIT. Areas or islands of public land indexed for easy reference at the start of the wilderness inventory. These units may or may not be roadless. A roadless determination requires more detailed field work.

LIFE ZONES. Any series of biogeographic zones into which a continent, region, etc., is divided by latitude and altitude on the basis of the characteristic animal and plant life in a zone.

LITHIC. A stone or rock exhibiting modification by humans. It generally applies to projectile points, scrapers, and chips rather than ground stone.

MAGMA. Naturally occurring mobile rock material generated within the earth and capable of intrusion and extrusion from which igneous rocks are thought to have been derived through solidification and related processes.

MAGNETIC PROSPECTING/GRAVITY SURVEYS. A technique of applied geophysics; a survey using a magnetometer or a gravity meter on the ground or from the air to measure variations in magnetic or gravitational intensity.

MALPAIS. Rough country composed of dark basaltic lava.

MANAGEMENT FRAMEWORK PLAN (MFP). A planning decision document that establishes for a given planning area land use allocations, coordination guidelines for multiple use, and management objectives to be achieved for each class of land use or protection. A MFP is prepared in three steps: (1) resource recommendations, (2) impact analysis and alternative development, and (3) decisionmaking.

METAMORPHIC ROCKS. Rocks formed in the solid state in response to changes of temperature, pressure, and chemical environment.

METAMORPHISM. Process by which consolidated rocks are altered in composition, texture, or internal structure by conditions and forces not resulting simply from burial and the weight of subsequently accumulated overburden.

METAVOLCANICS. Partly metamorphosed volcanic rocks.

MINERALIZATION. The process of converting or being converted into a mineral, as a metal into an oxide, sulfide, etc.

OFF-ROAD VEHICLE (ORV). Any motorized vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other terrain.

OVERSTORY. The upper canopy(s) of plants.

PALEOENVIRONMENTAL STUDIES. Studies using fossilized pollen and other geological and biological remains to determine past climatic conditions.

PALEO-INDIAN. Cultural remains of human groups which co-existed with Pleistocene megafauna in North America, dating from 15,000 B.C. to approximately 7000 B.C.

PARTHENOGENIC. Unisexual reproduction where offspring are produced from unfertilized eggs.

PEDIMENT. A broad gentle sloping bedrock surface that is situated at the foot of a much steeper mountain slope in an arid or semiarid region.

PERENNIAL STREAM. A stream or portion of a stream which flows continuously.

PERIPHERAL SPECIES. Species whose normal range is in adjoining states or Mexico and which are at the edge of their range in New Mexico.

PETROGLYPH. A form of rock art manufactured by incising, scratching, or pecking designs into rock surfaces.

PLACER. A place where gold is obtained by washing; an alluvial or glacial deposit, as of sand or gravel, containing particles of gold or other valuable minerals.

PLATFORM. The area of thinner sediments adjoining a geosynclinal wedge of thicker equivalent beds or a basin of thicker equivalent sediments.

PLAYA. The usually dry and nearly level lake plain that occupies the lowest part of a closed depression.

PLUGS. Volcanic necks consisting of a mass of solidified igneous rock.

PLUTON. In the strictest sense, a body of igneous rock that has formed beneath the surface of the earth by consolidation from magma.

PROSPECT HOLE. Any shift, pit, drift, drill hole, or ditch made for the purpose of prospecting the mineral-bearing ground.

PROVINCE. A large area or region unified in some way and considered as a whole.

PSEUDORIPARIAN AREAS. Intermittent drainages (arroyos) supporting a more varied vegetation composition than the surrounding upland areas.

PSILOMELANE. An ore of manganese.

PUBLIC LAND. Any land and interest in land owned by the United States and administered by the Secretary of the Interior through the Bureau of Land Management, without regard to how the United States acquired ownership, except:

- lands located on the Outer Continental Shelf
- lands held for the benefit of Indians, Aleuts, and Eskimos
- lands in which the United States retains the minerals, but surface is private.

PUMICE. An excessively cellular, glassy lava, generally composed of rhyolite.

PYROLUSITE. The principal ore of manganese.

PYROXENE. A group of dark, rock-forming silicate minerals.

RANGE SITE. Is a distinctive kind of rangeland that differs from other kinds of rangeland in its ability to produce a characteristic natural plant community. A range site is the product of all the environmental factors responsible for its development. It is capable of supporting a native plant community typified by an association of species that differs from that of other range sites in the kind or proportion of species or in total production.

RANGELAND DEVELOPMENT. Any facility or structure relating to rangelands which is designed to control patterns of use, provide water, and stabilize soil and water conditions.

RAPTOR. Any predatory bird such as a falcon, hawk, eagle, or owl that has feet with sharp talons or claws adapted for seizing prey and a hooked beak for tearing flesh.

RARE II. The wilderness inventory on lands administered by the Secretary of Agriculture through the United States Forest Service. The acronym stands for Roadless Area Review and Evaluation, and the "II" signifies that it is the second time the Forest Service has inventoried and evaluated the lands it administers.

RED BEDS. Term applied to red sedimentary rocks which usually are sandstones and shales, although in exceptional cases red limestones have been reported.

RHYOLITE. The extrusive equivalent of granite.

RIFT. A rift or rift zone usually refers to a system of fractures (faults) in the earth's crust and the associated valley or depression.

RIGHT-OF-WAY. An easement or permit which authorizes public land to be used for a specified purpose that generally requires a long narrow strip of land. Examples are roads, powerlines, pipelines, etc.

RIPARIAN VEGETATION. Vegetation which occurs in or adjacent to essentially perennial drainage ways or their floodplains.

ROAD. For the purpose of the BLM's wilderness inventory, the following definition has been adopted from the legislative history of the Federal Land Policy and Management Act:

"The word 'roadless' refers to the absence of roads which have been improved and maintained by mechanical means to ensure relatively regular and continuous use. A trail maintained solely by the passage of vehicles does not constitute a road."

To clarify this definition, the following subdefinitions also apply:

"Improved and maintained" - Actions taken physically by man to keep a road open to vehicular traffic. "Improved" does not necessarily mean formal construction. "Maintained" does not necessarily mean annual maintenance.

"Mechanical means" - Use of hand or power machinery or tools.

"Relatively regular and continuous use" - Vehicular use which has occurred and will continue to occur on a relatively regular basis. Examples are: access roads for equipment to maintain a stock water tank or other established water sources, access roads to maintained recreation sites or facilities, or access roads to mining claims.

ROADLESS. Refers to the absence of roads which have been improved and maintained by mechanical means to ensure relatively regular and continuous use. A trail maintained solely by the passage of vehicles does not constitute a road.

ROADLESS AREA. That area which is roadless, as defined above, and is bounded by a road, the edge of a right-of-way, other land ownership, or a significant imprint of man.

SEDIMENTARY ROCKS. Rocks formed by the accumulation of sediment.

SHEAR ZONE. A geologic zone in which shearing has occurred on a large scale so that the rock is crushed and brecciated.

SILICEOUS. Of or pertaining to silica; containing silica, or partaking of its nature. Containing abundant quartz.

SILL. A tabular igneous intrusion that parallels the planar structure of the surrounding rock.

SPECIAL CONCERN ELEMENT. Plant species considered rare or endangered by the New Mexico State Heritage Program, but not legislatively protected.

SPLIT ESTATE. Refers to the situation where the subsurface mineral estate is owned or controlled by a party other than the owner of the surface of the same land area.

SOLITUDE. Outstanding opportunities for solitude or primitive and unconfined recreation are wilderness characteristics examined in the intensive wilderness inventory. Factors contributing to opportunities for solitude are vegetative screening, topographic relief, vistas, and physiographic variety. 1. The state of being alone or remote from habitations; isolation. 2. A lonely, unfrequented, or secluded place.

STANDARD HABITAT SITE. A grouping of habitat sites based on similarity of vegetation and local landform.

STANDARD METROPOLITAN STATISTICAL AREA (SMSA). A metropolitan area that has a large population nucleus together with adjacent communities which have a high degree of economic and social integration with that nucleus. Each SMSA has one or more central counties containing the area's main population concentration; an urbanized area with at least 50,000 inhabitants.

STEPPE. Arid land usually characterized as being level and without forests; usually in large tracts and in regions of extreme temperature range and loose soil.

STORAGE TANK. A permanent water holding structure used to supply water to troughs, pipelines, etc.

STRATIFORM. Composed of layers.

STRINGER. A narrow vein or irregular filament of mineral occurring in a rock.

SULFIDE. A compound of sulfur with one other more positive element or radical.

SUPERGENE. Applied to ores or ore minerals that have been formed by generally descending water. Ores or minerals formed by downward enrichment.

SUPPLEMENTAL VALUES. Features of ecological, geological, or other scientific, educational, scenic, or historical value that may be present in an inventory unit. These are not necessary criteria for wilderness suitability, as is stated in the Wilderness Act of 1964, but must be assessed during the intensive wilderness inventory.

SUSTAINED YIELD. Management of a biological resource (as timber) such that the portion removed by one harvest is replaced by growth or reproduction before another harvest occurs.

SYENITE. An igneous rock composed primarily of alkali feldspar together with other minerals, such as hornblende.

SYNCLINE. A trough of stratified rock in which the beds dip toward each other from either side.

TECTONIC. Relating to the deformation of the earth's crust.

THREATENED SPECIES. Any species likely to become endangered within the foreseeable future throughout all or a significant part of its range.

TRAVERTINE. Calcium carbonate deposits commonly associated with hot springs.

TROUGH. An elongate and wide depression with gently sloping borders.

TUFF. A compacted deposit of volcanic ash and dust that may contain sand and clay.

UNALLOTTED FEDERAL LAND. Federal land which currently is not committed to livestock grazing use.

UNCONFORMABLE. Having the relation of unconformity to the underlying rocks; not succeeding the underlying strata in immediate order of age and in parallel position.

UNDERSTORY. The plants growing beneath the canopy of other plants.

UPLIFT. Elevation of any extensive part of the earth's surface relative to some other parts.

VEHICLE TRAIL. A two-wheel track created only by the passage of vehicles. A trail is not a road.

VESICULAR BASALT. Basalt with abundant vesicles formed as a result of the expansion of gases during the fluid stage of lava.

VISUAL RESOURCE MANAGEMENT (VRM) CLASSES. VRM Classes are based on relative visual ratings of inventoried lands. Each class describes the different degree of modification allowed to the basic elements of the landscape. The following are the minimum management objectives for each class.

Class I - Natural ecological changes and very limited management activity are allowed. Any contrast created within the characteristic landscape must not attract attention. This classification is applied to Visual Areas of Critical Environmental Concern, wilderness areas, wild and scenic rivers, and other similar situations.

Class II - Changes in any of the basic elements (form, line, color, texture) caused by a management activity should not be evident in the landscape. A contrast may be seen but should not attract attention.

Class III - Contrasts to the basic elements caused by a management activity may be evident and begin to attract attention in the landscape. The changes, however, should remain subordinate in the existing landscape.

Class IV - Contrasts may attract attention and be a dominant feature in the landscape in terms of scale. However, the changes should repeat the basic elements of the landscape.

WATER SPREADER. Usually several small, earthen, rock structures used to slow the water flow and give the runoff a chance to be absorbed by the soils and plants.

WILDERNESS. The definition contained in Section 2(c) of the Wilderness Act of 1964 is as follows: "A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain." Wilderness is an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5,000 acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

WILDERNESS AREA. An area formally designated by Congress as part of the National Wilderness Preservation System.

WILDERNESS CHARACTERISTICS. Those characteristics of wilderness as described in Section 2(c) of the Wilderness Act. These include size, naturalness, solitude, primitive and unconfined type of recreation, and supplemental values.

WILDERNESS INVENTORY. An evaluation of the public land in the form of a written description and a map showing those lands that meet the wilderness criteria as established under Section 603(a) of the Federal Land Policy and Management Act and Section 2(c) of the Wilderness Act. The lands meeting the criteria will be referred to as Wilderness Study Areas (WSAs). Those lands identified as not meeting wilderness criteria will be released from further wilderness consideration.

WILDERNESS REVIEW. The term used to cover the entire wilderness inventory, study, and reporting phases of the wilderness program of the BLM.

WILDERNESS STUDY. The process of analyzing and planning wilderness preservation opportunities along with other resource opportunities within the BLM's planning system.

WITHDRAWAL. An action that restricts the use of public land and segregates the land from some or all of the public land or mineral laws.

ZEOLITES. A large group of minerals that are characterized by their easy and reversible loss of water. They are used in the base exchange method of water softening and as gas absorbents or drying agents (filters).

REFERENCES

REFERENCES

- Anderson, E. C. "The Metal Resources of New Mexico and Their Economic Features Through 1954." State Bureau of Mines and Mineral Resources, Bulletin 39. Socorro, New Mexico: New Mexico Institute of Mining and Technology, 1957.
- Applegarth, J. S., Bednarz, J. C. and Williamson, M. A. "The Ridge-nosed Rattlesnake in New Mexico: A Review of Existing Information and a Search for Suitable Habitat on Public Lands." (BLM Contract No. NM-910-CTO-9) Las Cruces, New Mexico: BLM, Las Cruces District Office, 1980.
- Atlantic Richfield Company. "Energy and Mineral Resource Evaluations." Las Cruces, New Mexico: BLM, Las Cruces District Office, 1983.
-
- Bailey, V. "Biological Survey of Texas." North American Fauna, 25 (1905).
- Bauch, J. H. A. "Geology of the Central Area of the Loma de las Canas Quadrangle, Socorro, New Mexico" (M.S. Thesis). Socorro, New Mexico: New Mexico Institute of Mining and Technology, 1982.
- Bavin, R. L. "Ecology and Behavior of the Persian Ibex in the Florida Mountains, New Mexico" (M.S. Thesis). Fort Collins, Colorado: Colorado State University, 1975.
- Behler, J. L. The Audobon Society Field Guide to North American Reptiles and Amphibians. New York, New York: Alfred A. Knopf, 1979.
- Benson, S. B. "Three New Rodents from Lava Beds of Southern New Mexico." University of California Publ. in Zool., 38 (1932): 335-344.
- _____. "Concealing Coloration Among Some Desert Rodents of the Southwestern United States." University of California Publ. in Zool., 140(1) (1933): 1-70.
- Bigsby, Philip, and Maxwell, Charles H. "Mineral Resource Potential of El Malpais Instant Study Area and Adjacent Areas, Valencia County, New Mexico." Open-File Report 81-557. Albuquerque, New Mexico: U.S. Geological Survey, 1981.
- Black, B. A. "Geology of the Northern and Eastern Parts of the Otero Platform, Otero and Chavez Counties: New Mexico" (Ph.D. Dissertation). Albuquerque, New Mexico: University of New Mexico, 1973.
- _____. "Geology and Oil and Gas Potential of the Northeast Otero Platform Area, New Mexico, in Las Cruces Country." New Mexico Geological Society Guidebook, 26 (1975): 323-333.

Boyd, D. W. "Stratigraphy of the Brokeoff Mountains, New Mexico." Proceedings of the Permian Field Conference, (1955): 47-51.

_____. "Permian Sedimentary Facies, Central Guadalupe Mountains, New Mexico." New Mexico Bureau of Mines and Mineral Resources Bulletin No. 40. Socorro, New Mexico: New Mexico Bureau of Mines and Mineral Resources, 1958.

Broadhead, Ronald. "Petroleum Resources, in Preliminary Mineral-Resource Potential of Cibola County, Northwestern New Mexico": New Mexico Bureau of Mines and Mineral Resources Open-File Report 230. Socorro, New Mexico: NMBMMR, 1986.

Brobst, D. A. and Pratt W. P. (eds.). "United States Mineral Resources." U.S. Geological Survey Professional Paper 820, 1973.

Callender, J. F., Seager, W. R. and Swanberg, C. A. "Late Tertiary and Quaternary Tectonics and Volcanism, Geothermal Resources of New Mexico" (Scientific Map Series). Las Cruces, New Mexico: New Mexico State University, 1983.

Carley, C. (U.S. Fish and Wildlife Service). Absence of Gray Wolf on Threatened and Endangered List Requests (Telephone conversation with Linda Seibert, EIS Team Wildlife Biologist). BLM, Las Cruces District Office, May 19, 1982.

Chamberlin, R. M. Preliminary Evaluation of the Mineral Resource Potential of the Sierra Ladrones Wilderness Study Area, Socorro County, New Mexico. Socorro, New Mexico: New Mexico Bureau of Mines and Mineral Resources, 1982.

Chenoweth, W. L. "Uranium Resources of New Mexico, in Tectonics and Mineral Resources of Southwestern North American." New Mexico Geological Society Special Publication No. 6. Socorro, New Mexico: New Mexico Geological Society, 1976.

Clark, Ronnie D. "Rio Puerco Watershed Management Plan: A Test of the Application of WRC Principles and Standards." Santa Fe, New Mexico: BLM, New Mexico State Office, 1975.

Connor, J. "Wintering Bald Eagles on Rangeland in the Socorro District." Socorro, New Mexico: BLM, Socorro Resource Area Office, 1980.

Conover, C. S. "Ground-Water Conditions in the Rincon and Mesilla Valleys and Adjacent Areas in New Mexico." U.S. Geological Society Water Supply Paper 1230. Washington, D.C.: U.S. Government Printing Office, 1954.

Corbitt, L. L. and Woodward, L. A. "Tectonic Framework of Cordilleran Foldbelt in Southwestern New Mexico." American Association of Petroleum Geologists Bulletin, vd. 57, No. 11, 1973.

- Corbitt, L. L. and Woodward, L. A. "Thrust Faults of Florida Mountains, New Mexico and Their Regional Tectonic Significance." New Mexico Geological Society Guidebook of the Tyrone-Big Hatchet Mountains-Florida Mountains, (1970): 69-74.
- Council on Environmental Quality. "Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act." 40 Code of Federal Regulations, Parts 1500-1508. Washington, D.C.: U.S. Government Printing Office, 1978.
- Craig, Steven D. "Hydrology and Water Resources of the Chico Arroyo/Torreon Wash Area, Sandoval and McKinley Counties, New Mexico" (M.S. Thesis). Socorro, New Mexico: New Mexico Institute of Mining and Technology, 1980.
- Cully, Anne. Natural Resources Department, State of New Mexico. Letter on File, Rio Puerco Resource Area, Bureau of Land Management. Santa Fe, New Mexico: February 3, 1986.
- Curlin, J. W. Deputy Assistant Secretary for Land and Water Resources. Processing of Major Land Withdrawals. (Letter to Perry J. Fliakas, Deputy Assistant Secretary of Defense) BLM, Las Cruces District Office, December 12, 1979.
-
- Darton, N. H. "The Zuni Salt Lake." Journal of Geology, 13 (1905).
- Dice, L. R. "Mammal Distribution in the Alamogordo Region, New Mexico." Occasional Papers of the Museum of Zoology, No. 213, 1930.
- Dittert, A. E. "Culture Change in the Cebolleta Mesa Region, Central Western New Mexico" (PhD Dissertation). Tucson, Arizona: University of Arizona, 1959.
- Dixon, G. H., Baltz, D. H. and Stipp, T. F. "Record of Wells Drilled for Oil and Gas in New Mexico." U.S. Geological Survey Circular. Albuquerque, New Mexico: U.S. Geological Survey, n.d.
- Dobrott, S. Gray Ranch Biologist. Possible Occurrence of Gray Wolf in Cowboy Spring WSA. (Personal communication with Linda Seibert, EIS Team Wildlife Biologist). BLM, Las Cruces District Office, November 1981.
- Doty, G. C. "Technical Report 15: Reconnaissance of Ground-Water in Playas Valley, Hidalgo County, New Mexico." Santa Fe, New Mexico: New Mexico State Engineer's Office, 1960.
- Dunham, K. C. "Geology of Organ Mountains." New Mexico Bureau of Mines and Mineral Resources Bulletin No. 11. Socorro, New Mexico: New Mexico Bureau of Mines and Mineral Resources, 1935 (reprinted 1980).
- Dunmire, W. W. Comments on Brokeoff Mountains Wilderness Study Area. (Memorandum from Superintendent, Carlsbad Caverns and Guadalupe Mountains to Area Manager, Bureau of Land Management) Las Cruces, New Mexico: BLM, Las Cruces District Office, January 12, 1982.

Dutton, C. E. "Mount Taylor and the Zuni Plateau." USGS Annual Report 6.
Washington, D.C.: U.S. Geological Survey, 1885.

Earth Environmental Consultants, Inc. "Water Quality and Quantity, and
Sediment Yield Study for the Southern Rio Grande Range EIS Area,
New Mexico." (3 volumes) (BLM Contract) Las Cruces, New Mexico: BLM,
Las Cruces District Office, 1979.

Eggleston, T. L. "Geology of the Central Chupadera Mountains, Socorro County,
New Mexico" (M.S. Thesis). Socorro, New Mexico: New Mexico Institute of
Mining and Technology, 1982.

Farnham, L. L. "Manganese Deposits of New Mexico." Bureau of Mines Infor-
mation Circular 8030. Socorro, New Mexico: New Mexico Bureau of Mines
and Mineral Resources, 1961.

Foster, R. et al. "Third Day Log for Saturday, October 17, 1959, Gallup to
Socorro via Zuni Pueblo, Fence Lake, Salt Lake and Quemado." New Mexico
Geological Society Guidebook of West-Central New Mexico, Tenth Field
Conference. Socorro, New Mexico: New Mexico Geological Society, 1959.

Foster, R. W. and Grant, P. R. The Future of New Mexico's Oil and Gas
Resources, Resource Map 3. Socorro, New Mexico: New Mexico Bureau of
Mines and Mineral Resources, 1974.

Foster, R. W., Gutjahr, A. L. and Warner, G. H. "Estimates of New Mexico's
Future Oil Production" New Mexico Bureau of Mines and Mineral Resources
Circular 166. Socorro, New Mexico: New Mexico Bureau of Mines and
Mineral Resources, 1978.

Geller, B. "Rock Rhetoric: Introduction to New Mexico - Part II." The
Mining Record, Wednesday, October 12, 1983.

Geoexplorers International, Inc. (Dr. Jan Drason et al.). Geology, Energy
and Mineral Resources Assessments, Armendaris, Carrizozo, Humphrey Canyon,
Manzano, Salt Lake, San Augustin, San Luis and Socorro Areas, New Mexico.
Denver, Colorado: Geoexplorers International, 1982. (Prepared under
contract for BLM.)

_____. "Geology, Energy and Mineral Resources Assessment of the San
Augustin Area, New Mexico." (Prepared for the Bureau of Land Management,
New Mexico.) Las Cruces, New Mexico: BLM, Las Cruces District Office,
1982.

_____. "Geology, Energy and Mineral Resources Assessment of the
Socorro Area, New Mexico." (Prepared for the Bureau of Land Management,
New Mexico.) Las Cruces, New Mexico: BLM, Las Cruces District Office,
1982.

Griggs, R. L. Trace Elements Preliminary Reconnaissance Report, Carbonaceous Rocks. Albuquerque, New Mexico: U.S. Geological Survey, 1954.

Hakkila, M., Bureau of Land Management. "Significance of Hybrid Lizard Species in Cooke's Range." (Personal communication with Linda Seibert, EIS Team Wildlife Biologist.) BLM, Las Cruces District Office, May 1982.

Harbridge House, Inc. "Southwestern New Mexico Social-Economic Profile." (BLM Contract) Denver, Colorado: Harbridge House, Inc., 1978.

Health Research Services and Analysis, Inc. "Water Resource Inventory in the Southwest EIS Area, New Mexico." (Prepared for the Bureau of Land Management, Las Cruces District.) Las Cruces, New Mexico: BLM, Las Cruces District Office, 1982.

Hitchcock, A. S. Manual of the Grasses of the United States. (Two Volumes) New York, New York: Dover Publications, Inc., 1971.

Hubbard, J. P. "The Summer Birds of the Gila Valley, New Mexico." Nemouria 2, 2 (1971): 5-12.

_____. "Revised Check-list of the Birds of New Mexico." New Mexico Ornithological Society Publication No. 6. Albuquerque, New Mexico: McLeod Printing Company, 1978.

Hubbard, J. P., Conway, M. C., Campbell, H., Schmitt, G. and Hatch, M. D. Handbook of Species Endangered in New Mexico. Santa Fe, New Mexico: New Mexico Department of Game and Fish, 1979.

Hubbard, J. P., Schmitt, C. G. and Bednarz, J. C. "Aerial and Ground Surveys for Nesting Peregrine Falcons on Bureau of Land Management Lands in New Mexico in 1980." (Contract No. NM-910-RFP0-11) Santa Fe, New Mexico: New Mexico Department of Game and Fish, 1980.

Hunt, C. B. "Igneous Geology and Structure of the Mount Taylor Volcanic Field, New Mexico." USGS Professional Paper 189-B. Washington, D.C: U.S. Geological Survey, 1938.

Hutchins, M. F. "Mineral Resource Areas of the Basin and Range Province of New Mexico." U.S. Geological Survey, Open-File Report 83-665, 1983.

Jaworski, M. J. "Copper Mineralization of the Upper Moya Sandstone, Chupadera Mines Area, Socorro County, New Mexico." (M.S. Thesis) Socorro, New Mexico: New Mexico Institute of Mining and Technology, 1973.

- Katz, P. R. and Katz, S. R. "Recent Investigations in the Southern Guadalupe Mountains Locality of West Texas." Transactions on the 12th Regional Archaeological Symposium for Southeastern New Mexico and Western Texas, 1977.
- Kelley, V. C. "Influence of Regional Structure and Tectonic History Upon the Origin and Distribution of Uranium on the Colorado Plateau." (In Contributions to the Geology of Uranium and Thorium by the U.S. Geological Survey and Atomic Energy Commission, United Nations International Conference on Peaceful Uses of Atomic Energy, Geneva, Switzerland) U.S. Geological Survey Professional Paper 300. Albuquerque, New Mexico: U.S. Geological Survey, 1955.
- _____. "Geology and Economics of New Mexico Iron-Ore Deposits." University of New Mexico Publications in Geology Number Two. Albuquerque, New Mexico: University of New Mexico, 1979.
- _____. and G. H. Wood, Jr. Lucero Uplift, Valencia, Socorro and Bernalillo Counties, New Mexico: U.S. Geological Survey Oil and Gas Inv. Prelim. Map 47.
- Kelley, V. C. "Geology of Albuquerque Basin." New Mexico Bureau of Mines and Mineral Resources Memoir 33. Socorro, New Mexico: NMBMR, 1977.
- Kemrer, Meade F. (ed.) Archaeological Variability Within The Bisti - Star Lake Region, Northwestern New Mexico. Albuquerque, New Mexico: BLM, Albuquerque District Office, 1982.
- King, P. B. "Geology of the Southern Guadalupe Mountains, Texas." U.S. Geological Survey Professional Paper, 215, 1948.
- King, W. E., Hawley, J. W., Taylor, A. M. and Wilson, R. P. "Hydrogeology of the Rio Grande Valley and Adjacent Intermontane Areas of Southern New Mexico." Water Resources Research Institute, Report No. 5. Las Cruces, New Mexico: New Mexico State University, 1969.
- _____. "Geology and Groundwater Resources of Central and Western Dona Ana County, New Mexico." Hydrologic Report 1. Socorro, New Mexico: Water Resources Institute and New Mexico Bureau of Mines and Mineral Resources, 1971.
- Knight, J. Paul. "Investigation into the Flora of Several BLM Wilderness Study Areas in the Albuquerque District." Santa Fe, New Mexico: Department of Natural Resources, New Mexico State Heritage Program, 1982.
- Kottowski, F. E. "High Purity Dolomite Deposits of South Central New Mexico." Circular 47. Socorro, New Mexico: New Mexico Bureau of Mines and Mineral Resources, 1957.
- _____. "Reconnaissance of Commercial High-Calcium Limestones in New Mexico." Circular 60. Socorro, New Mexico: New Mexico Bureau of Mines and Mineral Resources, 1962.

Kottlowski, Frank. "Pennsylvanian Rocks on the Northeast Edge of the Datil Plateau." New Mexico Geological Society Tenth Field Conference Guidebook: West Central New Mexico. NMGS, 1959.

Kuchler, A. W. "Potential Natural Vegetation of the Conterminous United States: American Geographical Society Special Publication No. 36." New York, New York: American Geographical Society, 1964.

Kuchler, A. W. Potential Natural Vegetation Map. Washington, D.C.: U.S. Geological Survey, 1966.

Kues, Barry S. Fossils of New Mexico. Albuquerque, New Mexico: University of New Mexico Press, 1982.

LeBlanc, S. A., and Whalen, M. E. An Archaeological Synthesis of South-Central and Southwestern New Mexico. Albuquerque, New Mexico: University of New Mexico, Office of Contract Archaeology, 1980.

Lewis, T. H. "Dark Coloration in the Reptiles of the Malpais of the Mexican Border." Copeia, 4 (1951): 311-312.

Logsdon, M. J. Preliminary Evaluation of the Mineral Resource Potential of the Petaca Pinta Wilderness Study Area, Cibola County, New Mexico. Socorro, New Mexico: New Mexico Bureau of Mines and Mineral Resources, 1981.

Lynott, W. P. Climate and Dispersion Meteorology of BLM Lands in New Mexico. LaJolla, California: Science Applications, Inc., 1978.

Maxwell, C. H. "Stratigraphy and Structure of the Acoma Region, New Mexico." New Mexico Geological Society Special Publication 6. NMGS, 1976.

McAnulty, W. N., and McAnulty, N. "Organ Mountain Minerals Inventory and Evaluation Project Dona Ana County, New Mexico." (Unpublished Report) Las Cruces, New Mexico: BLM, Las Cruces District Office, 1979.

McGuff, P. R. A Special Project Cultural Resources Inventory (Class I) for the Ladrones Wilderness Study Area, Jornada Resource Area. Socorro, New Mexico: BLM, Socorro Resource Area Office, 1982.

McLean, J. S. "Hydrologic Maps and Data in the Mimbres Basin, New Mexico." Open-File Report 77-314. Albuquerque, New Mexico: U.S. Geological Survey, 1977.

McLemore, V. T., Broadhead, R. F., Barker, J. M., Austin, G. S., Klein, K., Brown, K. B., Murray, D., Bowie, M. R., and Hingtgen, J. S. "A Preliminary Mineral-Resource Potential of Valencia County, Northwestern New Mexico." New Mexico Bureau of Mines and Mineral Resources Open-File Report 230. Socorro, New Mexico: NMBMR, 1985.

- McLemore, V. T., Broadhead, R. F., Roybal, G., Chenoweth, W. L., Barker, J. M., North, R. M., Bowie, M. R., Hingtgen, J. S., Murray, D., Klein, K., Brown, K. B., and Austin, G. S. "A Preliminary Mineral Resource Potential of Cibola County, Northwestern New Mexico." New Mexico Bureau of Mines and Mineral Resources Open-File Report 230. Socorro, New Mexico: NMBMMR, 1986.
- McLemore, V. T., Roybal, G. H., Broadhead, R. F., Chamberlin, R., North, Robert M., Osburn, J. C., Arkell, B. W., Colpitts, R. M., Bowie, M. R., Anderson, K., Barker, J. M., and Campbell, F. "Preliminary Report on the Geology and Mineral Resource Potential of the Northern Rio Puerco Resource Area in Sandoval and Bernalillo counties and Adjacent Parts of McKinley, Cibola, and Santa Fe Counties, New Mexico." New Mexico Bureau of Mines and Mineral Resources Open-File Report 211. Socorro, New Mexico, 1984.
- McLemore, Virginia T. "Uranium and Thorium Occurrences in New Mexico": New Mexico Bureau of Mines and Mineral Resources Open-File Report OF-183. Socorro, New Mexico: NMBMMR, September 1983.
- Miller, Betty M. (ed.) "Petroleum Potential of Wilderness Lands in the Western United States." U.S. Geological Survey Circular 902-A-P. Washington, D.C.: U.S. Geological Survey, 1983.
- Moench, R. H. and Schlee, J. S. "Geology and Uranium Deposits of the Laguna District, New Mexico": U.S. Geological Survey Prof. Paper 519. Albuquerque, New Mexico: U.S. Geological Survey, 1967.
- Mountain West Research. Construction Worker Profile: Report to the Old West Regional Commission. Denver, Colorado: Mountain West Research, 1975.
-
- New Mexico Bureau of Mines and Mineral Resources. "Mineral and Water Resources of New Mexico": NMBMMR Bulletin No. 87. Socorro, New Mexico: NMBMMR, 1965.
- New Mexico Bureau of Mines and Mineral Resources. New Mexico Metal Resources Map, 1:500,000. Socorro, New Mexico: NMBMMR.
- New Mexico Bureau of Mines and Mineral Resources. "Oil and Gas in Socorro County, New Mexico." Socorro Region New Mexico Geological Society Guidebook, Fourteenth Field Conference. Socorro, New Mexico: NMBMMR, 1963.
- New Mexico Department of Game and Fish. Annual Harvest Statistics, 1981. (Unpublished data.)
- New Mexico Department of Game and Fish. Comprehensive Plan. Santa Fe, New Mexico: New Mexico State Planning Division, 1978.
- New Mexico Employment Security Department. "Research and Statistics." New Mexico Labor Market Review, 11(8) (1982):9.

- New Mexico Energy and Minerals Department. Annual Resources Report, 1985 Update. Santa Fe, New Mexico: NMEMD, 1985.
- New Mexico Energy and Minerals Department. Seventy-First Annual Report. Santa Fe, New Mexico: NMEMD, Bureau of Mine Inspection, 1984.
- New Mexico Environmental Improvement Division. Water Supply Regulations. Santa Fe, New Mexico: NMEID, 1977.
- New Mexico Geological Society. Field Guide to Selected Cauldrons and Mining Districts of the Datil-Mogollon Volcanic Field New Mexico: Special Publication No. 7. Socorro, New Mexico: New Mexico Geological Society, 1978.
- _____. Guidebook of the Socorro Region, New Mexico, Fourteenth Field Conference. Socorro, New Mexico: New Mexico Geological Society, 1963.
- _____. "Uranium Deposits in the Datil Mountains--Bear Mountains Region New Mexico." New Mexico Geological Society Guidebook of West-Central New Mexico, Tenth Field Conference. Socorro, New Mexico: New Mexico Geological Society, 1959.
- New Mexico Natural Resource Department. NRD Rule No., 85-3, Endangered Plant Species in New Mexico. Santa Fe, New Mexico: Natural Resources Department, 1985.
- New Mexico Oil and Gas Association. "New Mexico Oil and Gas Facts, '84."
- New Mexico Soil and Water Conservation Division. "Resource Conservation Act Appraisal." Santa Fe, New Mexico: New Mexico Soil and Water Conservation Division, 1980.
- New Mexico State Engineer. Rules and Regulations Governing Drilling of Wells and Appropriation and Use of Groundwater in New Mexico. Santa Fe, New Mexico: New Mexico State Engineer's Office, 1966 (Revised 1980).
- New Mexico State Heritage Program. "Computer Printout of Rare and Endangered Plant Species." (Unpublished.) Santa Fe, New Mexico: New Mexico State Heritage Program, 1982.
- New Mexico State Highway Department. Aggregate Resources Study: Highway District No. 1. Santa Fe, New Mexico: New Mexico State Highway Department, n.d.
- New Mexico Water Quality Control Commission. Lower Colorado River Basin Plan. Santa Fe, New Mexico: New Mexico Water Quality Control Commission, 1974.
- New Mexico Water Resources Research Institute. "An Analytical Interdisciplinary Evaluation of the Utilization of the Water Resources of the Rio Grande in New Mexico: Lower Rio Grande Region." Water Resources Research Institute Report No. 024. Las Cruces, New Mexico: New Mexico State University, 1974.
-

Petty, D. M. "Geology of the Southeastern Magdalena Mountains, Socorro County, New Mexico." Master's Thesis. Socorro, New Mexico: New Mexico Institute of Mining and Technology, 1979.

Potter, L. D. and Krenetsky, J. C. "Plant Succession with Released Grazing on New Mexico Rangelands." Journal of Range Management, May 1967.

Price, A. New Mexico State University Biology Department. Range Extension of "Cnemidophorus flagellicaudus". (Telephone conversation with Linda Seibert, EIS Team Wildlife Biologist.) BLM, Las Cruces District Office, February, 1982.

Prieto, A. A. and Jacobson, E. R. "A New Locality for Melanistic Crotalus molossus molossus in Southern New Mexico." Herpetologia 24(4) (1968): 399-340.

Ratliff, E. (Federal Land Bank). 1980 Market Value of Animal Unit Months. (Telephone conversation with Gerald Sanchez, BLM Economist. BLM, Las Cruces District Office, August 2, 1982.

Roth, S. J. "Geology of the Sawmill Canyon Area of the Magdalena Mountains, Socorro County, New Mexico." (M.S. Thesis). Socorro, New Mexico: New Mexico Institute of Mining and Technology, 1980.

Rothrock, H. E., Johnson, C. H. and Hahn, A. D. "Fluorspar Resources of New Mexico." New Mexico Bureau of Mines and Mineral Resources Bulletin 021. Socorro, New Mexico: New Mexico Bureau of Mines and Mineral Resources, 1947.

Ryder, R. T. "Petroleum Potential of Wilderness Lands in New Mexico." U.S. Geological Survey Circular 902-A-P (B. M. Miller, ed.) Washington, D.C.: U.S. Geological Survey, 1983.

Sandoval, A. Preliminary Survey Report on the Evaluation of Historic Desert Bighorn Sheep Ranges. Santa Fe, New Mexico: New Mexico Department of Game and Fish, 1978.

_____. New Mexico Department of Game and Fish. Future Bighorn Sheep Reintroduction Sites in Relation to Wilderness Study Areas. (Telephone conversation with Linda Seibert, EIS Team Wildlife Biologist.) BLM, Las Cruces District Office, March 1982.

Schmidt, J. L. and Gilbert, D. L., compilers and editors. Big Game of North American; Ecology and Management. Harrisburg, Pennsylvania: Stackpole Books, 1978.

Seager, W.R. "Cenezoic Tectonic Evolution of the Las Cruces Area, New Mexico." Las Cruces Country, New Mexico Geological Society Guidebook, Twenty-sixth Field Conference. Socorro, New Mexico: New Mexico Bureau of Mines and Mineral Resources, 1975.

- Shields, L. M. "Algal and Lichen Floras in Relation to Nitrogen Content of Certain Volcanic and Arid Range Soils. Ecology 38(4) (1957): 661-663.
- Shields, L. M. and Crispin, J. "Vascular Vegetation of a Recent Volcanic Area in New Mexico." Ecology 37(2) (1956): 341-351.
- _____. "Geology of Organ Mountains and Southern San Andres Mountains, New Mexico." Memoir 36. Socorro, New Mexico: New Mexico Bureau of Mines and Mineral Resources, 1981.
- Shoemaker, E. M. "Occurrence of Uranium in Diatremes on the Navajo and Hopi Reservations, Arizona, New Mexico and Utah." (In Contributions to the Geology of Uranium and Thorium by the United States Geological Survey and Atomic Energy Commission for the United Nations International Conference on Peaceful Use of Atomic Energy, Geneva, Switzerland) U.S. Geological Survey Professional Paper 300. Albuquerque, New Mexico: U.S. Geological Survey, 1955.
- Siemers, W. T. and Austin, G. S. Mines, Processing Plants, and Power Plants in New Mexico Resource Map 9. Socorro, New Mexico: New Mexico Bureau of Mines and Mineral Resources, 1979.
- Snow, C. "Habitat Management Series for Endangered Species, Bald Eagle (*Haliaeetus leucocephalus*)." Report No. 5. Socorro, New Mexico: BLM, Socorro Resource Area Office, 1973.
- Spellenberg, R. "Final Report on the Survey for Threatened or Endangered Plant Species on the East Side Socorro Area, Central New Mexico." (BLM Contract No. YA-512-CT6-198) Las Cruces, New Mexico: BLM, Las Cruces District Office, 1976, 1977.
- Spiegel, Z. "Geology and Groundwater Resources of Northeastern Socorro County, New Mexico." Groundwater Report 4. Socorro, New Mexico: New Mexico Bureau of Mines and Mineral Resources, 1955.
- Stone, W.J., Lyford, F.P., Frenzel, P.F., Mizell, N.H. and Padgett, E.T. "Hydrogeology and Water Resources of San Juan Basin, New Mexico." Hydrologic Report 6. Socorro, New Mexico: New Mexico Bureau of Mines and Mineral Resources, 1983.
- Sutcliffe, D. "Post-Release Investigations of Iranian Ibex in New Mexico and Evaluation of a Proposed Release Site." (M.S. Thesis) Las Cruces, New Mexico: New Mexico State University, 1972.
-
- Tabet, D. E. and Frost, S. J. Coal Fields and Mines of New Mexico Resource Map 10. Socorro, New Mexico: New Mexico Bureau of Mines and Mineral Resources, 1978.
- Tecolote Corporation. "Taos Mineral Resource Inventory." (BLM Contract No. YA-553-CT0-1088) Albuquerque, New Mexico: Tecolote Corp., 1981.

- Thompson, S. and Bierberman, R. A. "Oil and Gas Exploration Wells in Dona Ana County, New Mexico." Las Cruces Country, New Mexico Geological Society Guidebook, Twenty-sixth Field Conference. Socorro, New Mexico: New Mexico Bureau of Mines and Mineral Resources, 1975.
- Trauger, F. D. "Water Resources and General Geology of Grant County, New Mexico." Hydrologic Report 2. Socorro, New Mexico: New Mexico Bureau of Mines and Mineral Resources, 1972.
- Tuan, Y., Everand, A. E., Widdison, G. G. and Bennett, I. The Climate of New Mexico. (Revised Edition) Santa Fe, New Mexico: New Mexico State Planning Office, 1973.
-
- U.S. Bureau of Mines. Nonfuel Mineral Problems, 1979 and Beyond. Washington, D.C.: U.S. Bureau of Mines, January 1979.
- _____. "Mineral Facts and Problems" (1980 ed.). U.S. Bureau of Mines Bulletin No. 671. Washington, D.C.: U.S. Bureau of Mines, 1980.
- U.S. Department of Agriculture, Forest Service. Computer Data Base: Run Wild III - Wildlife Information Storage and Retrieval System. 1982.
- U.S. Department of Agriculture, Forest Service. "Description of the Ecoregions of the United States," compiled by Bailey, Robert G. Miscellaneous Publication 1391. Washington, D.C.: USDA, FS, 1980.
- U.S. Department of Agriculture, Soil Conservation Service. "Cabezon Area Soil Survey." Agricultural Experiment Station Research Report No. 188. Albuquerque, New Mexico: SCS, 1968.
- U.S. Department of Agriculture, Soil Conservation Service. "Sandoval County Soil Survey." (Unpublished) Albuquerque, New Mexico: SCS, 1980.
- U.S. Department of Agriculture, Soil Conservation Service. Soil Survey, Torrance Area, New Mexico. Washington, D.C.: USDA, SCS, and FS in cooperation with New Mexico Agricultural Experiment Station, 1970.
- _____. "Catron County Soil Survey." (Unpublished.) Albuquerque, New Mexico: Soil Conservation Service, n.d.
- _____. "Soil Survey of Socorro County, New Mexico." (Unpublished.) Albuquerque, New Mexico: Soil Conservation Service, n.d.
- U.S. Department of the Army. A Survey for Breeding Peregrine Falcons on Fort Bliss Military Reservation, New Mexico. (A report prepared for the Environmental Office, Directorate of Engineering and Housing, Fort Bliss, Texas, by Roger and Katherine Skaggs, Contract No. DABT 51-79-R-0147) Fort Bliss, Texas: U.S. Department of the Army, 1980.
- U.S. Department of Commerce, Bureau of the Census. Preliminary Population and Housing Unit Counts. (Census of Population, 1980) Washington, D.C.: U.S. Department of Commerce, 1981.

- _____. 1980 Census of Population and Housing, Table 1. Washington, D.C.: U.S. Department of Commerce, 1982.
- _____. 1980 Census of Population, New Mexico. Washington, D.C.: U.S. Department of Commerce, 1982.
- U.S. Department of Commerce, Bureau of Economic Analysis. Survey of Current Business, 62(4) (1982): 63.
- U.S. Department of Commerce, National Oceanic and Atmospheric Administration. Climate of New Mexico. Washington, D.C.: U.S. Government Printing Office, 1972.
- _____. Monthly Normals of Temperature, Precipitation and Heating and Cooling Degree Days 1941-1970. No. 81-New Mexico. Asheville, North Carolina: National Climatic Center, 1973.
- _____. Climatological Data. Asheville, North Carolina: National Climatic Center, 1970-1980.
- U.S. Department of Energy. "Energy Information Administration Monthly Energy Review - September 1984." Washington, D.C.: U.S. Department of Energy, December 1984.
- U.S. Department of the Interior, Bureau of Land Management. "Albuquerque District Intensive Inventories." Albuquerque, New Mexico: BLM, Albuquerque District Office, 1980.
- _____. Albuquerque District Wilderness Draft Environmental Assessment. Albuquerque, New Mexico: BLM, Albuquerque District Office, 1983.
- _____. Draft and Final East Socorro Grazing Environmental Statement Washington, D.C.: U.S. Government Printing Office, 1979.
- _____. Draft and Final Environmental Assessments, Wilderness Study Areas in the Las Cruces District. Las Cruces, New Mexico: BLM, Las Cruces District Office, 1983.
- _____. Draft and Final Grazing Environmental Impact Statement, Southern Rio Grande Planning Area. Las Cruces, New Mexico: BLM, Las Cruces District Office, 1981.
- _____. Draft and Final Las Cruces/Lordsburg Management Framework Plan Amendment/Environmental Impact Statement. Las Cruces, New Mexico: BLM, Las Cruces District Office, 1983.
- _____. Draft and Final Southern Rio Grande Management Framework Plan. Las Cruces, New Mexico: BLM, Las Cruces District Office, 1982.
- _____. Draft and Final Star Lake - Bisti Regional Coal Environmental Impact Statement. Albuquerque, New Mexico: BLM, Albuquerque District Office, 1978.

. Draft Proposed Wilderness Areas Environmental Impact Statement Bisti, De-na-zin, Ah-shi-sle-pah. Albuquerque, New Mexico: BLM, Albuquerque District Office, 1982.

. Proposed Rio Puerco Resource Management Plan and Final Environmental Impact Statement. Albuquerque, New Mexico: BLM, Albuquerque District Office, October 1985.

. Rio Puerco Resource Management Plan. Albuquerque, New Mexico: BLM, Albuquerque District Office, November 1986.

. Environmental Assessment Record and Technical Examination on Proposed Geothermal Resource Leasing in the Socorro Peak Area. Socorro, New Mexico: BLM, Socorro Resource Area Office, 1977.

. Final Environmental Impact Statement for the Proposed West Socorro Rangeland Management Program. Socorro, New Mexico: BLM, Socorro District Office, 1980.

. Final Environmental Statement for the Proposed Rio Puerco Livestock Grazing Management Program. Albuquerque, New Mexico: BLM, Albuquerque District Office, 1978.

. Gila Planning Unit Management Framework Plan. Las Cruces, New Mexico: BLM, Las Cruces District Office, 1978.

. Hermanas Management Framework Plan. Las Cruces, New Mexico: BLM, Las Cruces District Office, 1969, revised 1971.

. "Ignacio Chavez Grant Intensive Inventory." Albuquerque, New Mexico: BLM, Albuquerque District Office, 1979.

. "Integrated Habitat Inventory Classification System Data." (Unpublished Data) Las Cruces, New Mexico: BLM, Las Cruces District Office, 1979, 1981.

. Interim Management Policy and Guidelines for Lands Under Wilderness Review. Washington, D.C.: U.S. Government Printing Office, 1979.

. Las Cruces District Wilderness Supplemental Draft and Final Environmental Assessments. Las Cruces, New Mexico: BLM, Las Cruces District Office, 1984.

. Las Uvas Management Framework Plan. Las Cruces, New Mexico: BLM, Las Cruces District Office, 1975.

. Management Framework Plan: Rio Grande Planning Unit. Albuquerque, New Mexico: BLM, Albuquerque District Office, 1979.

. Mineral Resources Inventory. (13 Reports) Las Cruces, New Mexico: BLM, Las Cruces District Office, 1981.

. "New Mexico Statewide Forestry Inventory." (Inventory Data) Denver, Colorado: BLM, Denver Service Center, 1974.

- . New Mexico Statewide Wilderness Study: Draft Environmental Impact Statement and Wilderness Analysis Reports. Santa Fe, New Mexico: BLM, New Mexico State Office, 1985.
- . New Mexico Wilderness Review Initial Inventory Decision. Santa Fe, New Mexico: BLM, New Mexico State Office, 1979.
- . New Mexico Wilderness Study Area Decisions. Denver, Colorado: U.S. Government Printing Office, 1980.
- . New Mexico Wilderness Study Area Proposals. Santa Fe, New Mexico: BLM, New Mexico State Office, 1980.
- . New Mexico Wilderness Supplemental Draft and Final Environmental Assessments. Santa Fe, New Mexico: BLM, New Mexico State Office, 1983.
- . New Mexico Wilderness Supplemental Draft Environmental Assessment. Santa Fe, New Mexico: BLM, New Mexico State Office, 1983.
- . Nogal Wildlife Habitat Management Plan. Socorro, New Mexico: BLM, Socorro Resource Area Office, 1981.
- . Ojo del Espiritu Santo Grant Habitat Management Plan. Albuquerque, New Mexico: BLM, Albuquerque District Office, 1978.
- . Pelona and Horse Mountain Fire Management Plan. Socorro, New Mexico: BLM, Socorro Resource Area Office, 1982.
- . Proposed Rio Puerco Resource Management Plan and Final Environmental Impact Statement. Albuquerque, New Mexico: BLM, Albuquerque District Office, October 1985.
- . Reassessment of Wilderness Inventory Decision Remanded by the Interior Board of Land Appeals (IBLA) - Florida Mountains. Las Cruces, New Mexico: BLM, Las Cruces District Office, 1984.
- . Rio Grande Wildlife Habitat Management Plan. Socorro, New Mexico: BLM, Socorro Resource Area Office, 1982.
- . "Rio Puerco Raptor Inventory." Albuquerque, New Mexico: BLM, Albuquerque District Office, 1981.
- . Second Draft San Juan Regional Coal Environmental Impact Statement. Albuquerque, New Mexico: BLM, Albuquerque District Office, 1983.
- . "Socorro District Integrated Habitat Inventory Classification System (IHICS)." (Unpublished) Socorro, New Mexico: BLM, Socorro Resource Area Office, 1980, 1981.
- . Socorro District Threatened and Endangered Species Handbook. Socorro, New Mexico: BLM, Socorro Resource Area Office, 1981.

- _____. Socorro District Wilderness Draft and Final Environmental Assessments. Socorro, New Mexico: BLM, Socorro Resource Area, 1983.
- _____. Star Lake - Bisti Coal Region Accelerated Intensive Wilderness Inventory. Albuquerque, New Mexico: BLM, Albuquerque District Office, 1979.
- _____. Summary Wilderness Review New Mexico Situation Summaries. Santa Fe, New Mexico: BLM, New Mexico State Office, 1979.
- _____. Unit Resource Analysis and Management Framework Plan, Ladron Planning Unit. Socorro, New Mexico: BLM, Socorro Resource Area Office, 1976.
- _____. Unit Resource Analysis and Management Framework Plan, Mesa Planning Unit. Las Cruces, New Mexico: BLM, Las Cruces District Office, 1974.
- _____. Unit Resource Analysis and Management Framework Plan, Stallion Planning Unit. Socorro, New Mexico: BLM, Socorro Resource Area Office, 1975.
- _____. Upper Rio Puerco Wildlife Habitat Management Plan. Albuquerque, New Mexico: BLM, Albuquerque District Office, 1981.
- _____. "Water Rights Policy." Bureau of Land Management, New Mexico State Office Instruction Memorandum NM-82-55, Change 1. Las Cruces, New Mexico: BLM, Las Cruces District Office, 1982.
- _____. "Watershed Inventory of 1973." Albuquerque, New Mexico: BLM, Albuquerque District Office, 1973.
- _____. White Sands Resource Management Plan/Environmental Impact Statement. Las Cruces, New Mexico: BLM, Las Cruces District Office, 1985.
- _____. Wilderness Management Policy. Washington, D.C.: U.S. Government Printing Office, 1981.
- _____. Wilderness Study Policy: Policies, Criteria and Guidelines for Conducting Wilderness Studies on the Public Lands. Washington, D.C.: USDI, 1982.
- _____. Woodland Management Plan, Driveway Planning Unit. Socorro, New Mexico: BLM, Socorro Resource Area Office, 1982.
- _____. Woodland Management Plan, Quemado Planning Unit. Socorro, New Mexico: BLM, Socorro Resource Area Office, 1982.
- _____. and New Mexico Department of Game and Fish. "Interagency Browse Study - Ignacio Chavez Grant." (Unpublished) Albuquerque, New Mexico: BLM, Albuquerque District Office and NMDGF, 1974.

- U.S. Department of the Interior, Fish and Wildlife Service. "Black-footed Ferret Investigation - Rio Puerco Grazing Impact Statement Area. Albuquerque, New Mexico: BLM and USFWS, 1976.
- _____. Fish and Wildlife Service. "Endangered and Threatened Wildlife and Plants: Review for Plant Taxa for Listing as Endangered or Threatened Species." Federal Register, (45)(242) (1980): 82480-82569.
- _____. Fish and Wildlife Service. "Endangered Species List--Bureau of Land Management Wilderness Study Areas (WSAs)." (Memorandum from Regional Director, Fish and Wildlife Service, to New Mexico State Director, Bureau of Land Management) Las Cruces, New Mexico: BLM, Las Cruces District Office, May 7, 1982.
- _____. Master Plan Report: Bosque del Apache National Wildlife Refuge. Albuquerque, New Mexico: U.S. Fish and Wildlife Service, 1982.
- U.S. Department of the Interior, Geological Survey and New Mexico Bureau of Mines and Mineral Resources. Map of New Mexico: Misc. Investigations Series Map I-1327, 1981.
- U.S. Department of the Interior, Geological Survey, Water Resources Division. Water Resources Data for New Mexico. Albuquerque, New Mexico: Geological Survey, Water Resources Division, 1980.
- U.S. Department of the Interior, Geological Survey. "Mineral and Water Resources of New Mexico." New Mexico Bureau of Mines and Mineral Resources Bulletin 87. Socorro, New Mexico: New Mexico Bureau of Mines and Mineral Resources, 1965.
- U.S. Department of the Interior, Office of Hearings and Appeals, Interior Board of Land Appeals. IBLA 81-1065, New Mexico Natural History Institute; Redrock (NM-030-025) and Antelope (NM-020-053). Arlington, Virginia: Interior Board of Land Appeals, 1983.
- _____. IBLA 81-1068, 81-1071, Phillip Allen, Desert Wilderness Coalition; NM-020-007, NM-020-008, NM-020-009, NM-020-010, NM-020-016, NM-020-037, NM-020-051, NM-030-025, NM-030-031, NM-030-034, and NM-030-042. Arlington, Virginia: Interior Board of Land Appeals, 1983.
- U.S. Government. (Public Law 88-577) Wilderness Act of 1964. Washington, D.C.: U.S. Government Printing Office, 1964.
- _____. Federal Land Policy and Management Act of 1976. (43 USC 1701 et. seq.) Washington, D.C.: U.S. Government Printing Office, 1976.
- _____. Data Bank. Albuquerque, New Mexico: University of New Mexico, 1982.
- University of New Mexico, Bureau of Business and Economic Research. Participation in Outdoor Recreation - A Survey of New Mexico Residents. Albuquerque, New Mexico: University of New Mexico, 1975.
-

- Waite, Donald D. "Rio Puerco Special Evaluation Report." Santa Fe, New Mexico, 1972.
- Walsh, R. G., Gillman, R. A. and Loomis, J. B. Wilderness Resource Economics Recreation Use and Preservation Values. Fort Collins, Colorado: Colorado State University, Department of Economics, 1981.
- Weber, R. H. and Kottowski, F. E. "Gypsum Resources of New Mexico." New Mexico Bureau of Mines and Mineral Resources Bulletin 68. Socorro, New Mexico: New Mexico Bureau of Mines and Mineral Resources, 1959.
- Wells, S.G. "Regional Badland Development and a Model of Late Quaternary Evolution of Badland Watersheds, San Juan Basin, New Mexico." Chaco Canyon Country. Albuquerque, New Mexico: American Geomorphological Field Group, 1983 Field Trip Guidebook, 1983.
- Wengard, S. A. "Petroleum Prospects in Southwesternmost New Mexico." New Mexico Geological Society Guidebook, Tyrone-Big Hatchet Mountains - Florida Mountains Region. Socorro, New Mexico: New Mexico Bureau of Mines and Mineral Resources, 1970.
- Wilpolf, R. H. and Wanek, A. A. "Geology of the Region from Socorro and San Antonio East to Chupadera Mesa, Socorro County, New Mexico." U.S. Geological Survey Oil and Gas Investigations Map OM 121. Albuquerque, New Mexico: U.S. Geological Survey, 1951.
- Wilson, C. A., White, R. R., Orr, B. R. and Roybal, R. G. "Technical Report 43: Water Resources of the Rincon and Mesilla Valleys and Adjacent Areas, New Mexico." Santa Fe, New Mexico: New Mexico State Engineer's Office, 1981.
- Wilson, J. P. "Historical Profile of Southwestern New Mexico." Cultural Resources Management Division Report No. 21. Las Cruces, New Mexico: New Mexico State University, 1975.
- Woodroof, W. O. "Ecology and Behavior of the Persian Wild Goat (Capra aegagrus) in New Mexico." M.S. Thesis. Las Cruces, New Mexico: New Mexico State University, 1979.
-

Zeller, R. A. "Petroleum Geology of Southwestern New Mexico." New Mexico Geological Society Guidebook, Tyrone-Big Hatchet Mountains - Florida Mountains Region. Socorro, New Mexico: New Mexico Bureau of Mines and Mineral Resources, 1970.

INDEX

All Wilderness Alternative

S-1, S-3, S-4, 2-1, 2-5, 2-6, 4-19, 4-20, 4-21, 4-22, 4-23, 4-24, 5-2, 5-4, 5-10, 5-68, 5-69, 5-78

Conflict Resolution Alternative

S-3, S-4, 2-8, 4-29, 4-30, 4-31, 4-32, 4-33

Emphasis on Manageability Alternative

5-10

Energy Resources

S-4, 4-11, 4-15, 4-21, 4-26, 4-32

Livestock Grazing

S-1, S-4, 2-5, 2-6, 2-8, 2-10, 2-11, 3-26, 4-1, 4-16, 4-17, 4-18, 4-22, 4-23, 4-27, 4-28, 4-33, 4-36, 4-37, 5-8, 5-69, 5-82

Metallic Resources

4-11, 4-15, 4-22, 4-26, 4-27, 4-32

Mining Claims and Mineral Leases

4-7, 4-21, 4-26, 4-32

Nonmetallic Resources

4-15, 4-22, 4-27, 4-32

No Wilderness Alternative

S-1, S-3, S-4, 2-1, 2-10, 4-34, 4-35, 4-36, 4-37, 5-10, 5-37, 5-67, 5-68, 5-79, 5-85

Planning Issue and Criteria

1-6

Proposed Action

S-1, S-2, S-3, S-4, S-5, 1-1, 2-1, 2-2, 4-2, 4-3, 4-4, 4-5, 4-7, 4-8, 4-11, 4-15, 4-17, 4-18, 4-19, 4-20, 4-21, 4-22, 4-24, 4-25, 4-26, 4-27, 4-30, 4-31, 4-32, 4-34, 4-35, 5-5, 5-6, 5-10, 5-37, 5-44, 5-50, 5-62, 5-69, 5-76, 5-86, 5-87

Wilderness Values

S-1, S-2, 1-1, 1-6, 1-7, 2-1, 2-4, 2-5, 2-6, 2-8, 2-9, 2-10, 2-11, 3-1, 4-1, 4-3, 4-7, 4-8, 4-16, 4-18, 4-19, 4-20, 4-24, 4-26, 4-28, 4-29, 4-31, 4-33, 4-34, 4-36, 5-4, 5-5, 5-6, 5-37, 5-67, 5-69, 5-70, 5-74, 5-77, 5-79, 5-80, 5-85, 5-86, 5-87

BLM Library
D-553A, Building 50
Denver Federal Center
P. O. Box 25047
Denver, CO 80225-0047

Form 1279-3
(June 1984)

BORROWER

QH 76.5 .N6 N485

New Mexico state
wilderness stud

DATE
LOANED

BORROWER

USDI - BLM

BLM Library
D-553A, Building 50
Denver Federal Center
P. O. Box 25047
Denver, CO 80225-0047

